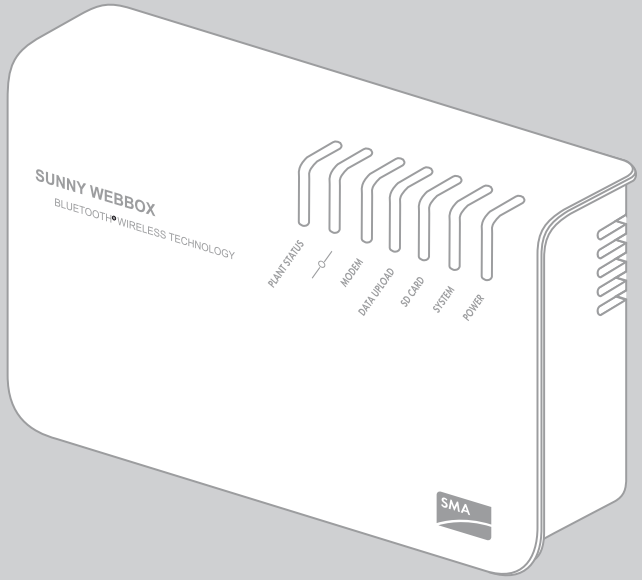
Device for Plant Monitoring

SUNNY WEBBOX with *Bluetooth*® Wireless Technology

User Manual



SWebBox20-BA-US-CA_en-13 | Version 1.3

US CA

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Important Safety Instructions

SAVE THESE INSTRUCTIONS

This manual contains important instructions for the following products:

- Sunny WebBox with *Bluetooth*® Wireless Technology

This manual must be followed during installation and maintenance.

The product is designed and tested in accordance with international safety requirements, but as with all electrical and electronic equipment, certain precautions must be observed when installing and/or operating the product. To reduce the risk of personal injury and to ensure the safe installation and operation of the product, you must carefully read and follow all instructions, cautions and warnings in this manual.

Warnings in this document

A warning describes a hazard to equipment or personnel. It calls attention to a procedure or practice, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the SMA equipment and/or other equipment connected to the SMA equipment or personal injury.

Symbol	Description
⚠ DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	NOTICE is used to address practices not related to personal injury.

General Warnings

⚠ WARNING

All electrical installations must be made in accordance with the local and *National Electrical Code*® ANSI/NFPA 70 or the *Canadian Electrical Code*® CSA C22.1. This document does not and is not intended to replace any local, state, provincial, federal or national laws, regulations or codes applicable to the installation and use of the product, including without limitation applicable electrical safety codes. All installations must conform with the laws, regulations, codes and standards applicable in the jurisdiction of installation. SMA assumes no responsibility for the compliance or noncompliance with such laws or codes in connection with the installation of the product.

The product contains no user-serviceable parts.
For all repair and maintenance, always return the unit to an authorized SMA Service Center.

Before installing or using the product, read all of the instructions, cautions, and warnings in this manual.

Wiring of the product must be made by qualified personnel only.

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1 Information on this Manual

This manual describes how to operate the Sunny WebBox with *Bluetooth*. Keep this manual in a convenient place for future reference. This manual does not contain any detailed information about the connected devices. Detailed information on connected devices is provided in the device manuals.

1.1 Validity

This user manual is valid for Sunny WebBox with *Bluetooth* from hardware version A1 and from firmware version 1.04.

1.2 Additional Information

Links to additional information can be found at www.SMA-Solar.com.

Document title	Document type
SMA *Bluetooth* - SMA *Bluetooth*® Wireless Technology in Practice	Technical information
SMA Safety and Password Concept for Password-protected PV Plants with *Bluetooth*® Wireless Technology	Technical description

You can call up the user manual of the Sunny WebBox with *Bluetooth* via the Help button on the user interface.

1.3 Nomenclature

Complete designation	Designation in this document
SMA America Production, LLC	SMA
SMA Solar Technology Canada Inc.	SMA
Sunny WebBox with *Bluetooth*® Wireless Technology	Sunny WebBox

1.4 Typographies

Formatting	Significance
[Save]	Buttons are displayed in square brackets [ ].
"Menu1"	Menu items are displayed in quotation marks.
"Menu1 > Menu2"	Menu paths are displayed in quotation marks. The angle bracket > separates individual menus.
Example:	Examples are represented in italics.

2 Safety

2.1 Intended Use

The Sunny WebBox with *Bluetooth* is a data logger that records, logs and makes available the data of a PV plant via a user interface via the integrated web server. The Sunny WebBox also enables remote diagnosis and the configuration of connected devices in a PV plant using the computer.

The Sunny WebBox is intended for private and industrial use.

The Sunny WebBox data is not suitable for billing purposes. The data collected by the Sunny WebBox regarding the amount of power generated by your plant may deviate from the energy meter data. Additional costs can be incurred from the use of the Internet.

The Sunny WebBox is designed for indoor use only.

Only operate the Sunny WebBox using the supplied plug-in power supply and within the voltage range intended for this.

The Sunny WebBox must be continuously supplied with current.

- Do not use the Sunny WebBox with a timer switch.

The Sunny WebBox is only to be used with original accessories or recommended accessories approved by SMA.

Only use the Sunny WebBox for the purposes described in this manual.

For safety reasons, it is forbidden to modify the product or install components that are not explicitly recommended for this product or distributed by SMA.

The enclosed documentation is an integral part of this product.

- Read and observe the documentation.
- Keep the documentation in a convenient place for future reference.

RF Exposure

This equipment should be installed and operated with minimum distance of 8 in. (20 cm) between the radiator and your body.

2.1.1 Supported Products

The Sunny WebBox supports the following SMA products:

- all SMA inverters with integrated *Bluetooth*
- SMA inverters with retrofitted SMA *Bluetooth* Piggy-Back/SMA *Bluetooth* Piggy-Back Plus from firmware version 02.00.00.R. A list of the supported inverters can be found in the SMA *Bluetooth* Piggy-Back/SMA *Bluetooth* Piggy-Back Plus manual.
- SMA *Bluetooth* Repeater
- Sunny SensorBox with SMA Power Injector with *Bluetooth*

Updating the firmware of SMA products

To ensure that *Bluetooth* communication functions correctly in the plant, the firmware of the SMA products must be up to date.

- Before commissioning the Sunny WebBox, update the firmware of the SMA products (see manual of the SMA products).

2.1.2 Target Group

This document is intended for end users and skilled persons. When you log into the Sunny WebBox there are two user groups at your disposal: "Installer" and "User". The user group "Installer" must only be used by qualified personnel who are authorized to make changes to grid-relevant parameters for the connected devices.

2.1.3 System Requirements

Recommended screen resolution:

- 1,024 pixel x 768 pixel

Internet browser:

- Internet Explorer from version 8
- Firefox from version 3.6

2.2 Safety Instructions

⚠ WARNING

Danger to life due to electric shock

Lethal voltages are present inside the device and inside the plug-in power supply.

- Do not open the device or the plug-in power supply.
- Only use the device indoors and in a dry environment; keep it away from liquids.

⚠ CAUTION

Risk of injury due to incorrect cable routing

Incorrectly laid cables may cause injuries due to tripping hazard.

- Install the cabling in such a way that no one can stand on or trip over it.

NOTICE

Property damage due to improper use

By touching electronic components, you can cause damage to or destroy the device through electrostatic discharge (ESD).

- Avoid coming into contact with component connections and plug contacts. Ground yourself before working on the device.

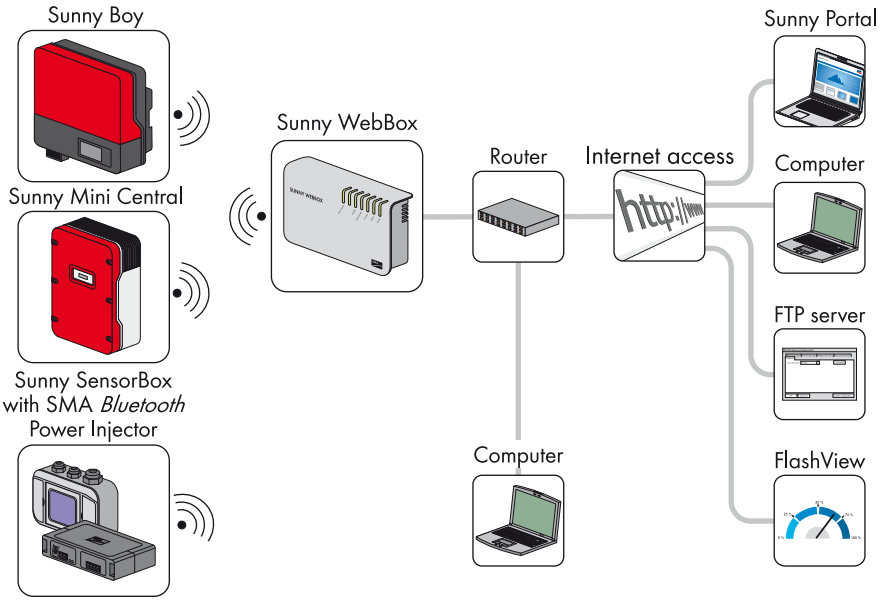
You can change the safety-related parameters of your SMA inverter using the Sunny WebBox. Incorrectly configured parameters can lead to yield losses.

- Do not alter these safety-relevant parameters without prior consultation with the electric utility company operating the grid into which your plant feeds.

3 Product Description

3.1 Sunny WebBox with *Bluetooth*

The Sunny WebBox with *Bluetooth* is a communication device that records, logs and makes available the data of a PV plant via a user interface using the integrated web server. The Sunny WebBox also enables remote diagnosis and the configuration of connected devices in a PV plant via the computer.



The Sunny WebBox can continuously interrogate and evaluate the data it receives from connected devices. The interrogation interval for the data of the whole PV plant is five minutes. If you display data via the user interface of the Sunny WebBox, the currently displayed data is interrogated every 20 seconds. If the connection with the PV plant is interrupted, the Sunny WebBox restores the connection as soon as possible.

The Sunny WebBox can automatically send the collected data of the PV plant to the Sunny Portal Internet portal or to a freely selectable FTP server for subsequent processing. You can also present your plant data via the Flashview software.

The Sunny WebBox has the function of a network-forming device (master device) in the *Bluetooth* plant. Master devices are communication products that form the structure of the *Bluetooth* PV plant and collect, evaluate and process data. Unlike other master devices, the Sunny WebBox can establish up to five uplinks, meaning that it can directly connect to five devices simultaneously. It can also assume the function of a slave/root node and participate in establishing the *Bluetooth* network. In this way, the Sunny WebBox can link together several groups of inverters that would otherwise have no *Bluetooth* connection.

The number of devices which the Sunny WebBox can manage depends on the number of master devices in the *Bluetooth* network with the same NetID. If the Sunny WebBox is the only master in the *Bluetooth* network, the Sunny WebBox can manage up to 50 devices. If two masters are present in the *Bluetooth* network (e.g. Sunny Explorer or Sunny Beam with *Bluetooth*), a maximum of 25 devices can be managed by the Sunny WebBox. A maximum of one Sunny WebBox with *Bluetooth* is allowed in a *Bluetooth* network with the same NetID. Additional information on SMA *Bluetooth* Wireless Technology can be found in the download area of www.SMA-Solar.com.

3.2 Functions

The most important functions of the Sunny WebBox with *Bluetooth* Wireless Technology at a glance:

Plant Communication

- Wireless control of the PV plant with *Bluetooth* Wireless Technology

External System Communication

- Ethernet network 10/100 Mbit

Integrated Web Server

- Quick overview of the current status of the PV plant
- Graphic display of key PV plant data
- Parameterization of individual devices or an entire device class
- Setting of SMA Grid Guard parameters
- Simple diagnostics thanks to the display of device events
- Secure data transmission thanks to a new password concept

PV Plant Data Management

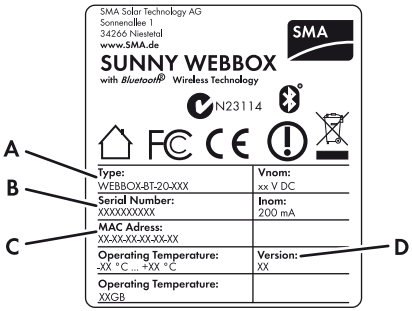
- Display plant data from the PV plant via the user interface
- Save plant data from the PV plant on an internal drive
- Save plant data from the PV plant to an optional SD card
- Automatically transmit plant data from the PV plant to the Sunny Portal
- Call up plant data via the internal FTP server
- Load plant data from the PV plant to an external FTP server via the FTP Push function
- Plant data in CSV or XML format

Service Functions

- Firmware update of the Sunny WebBox via Internet or SD card
- Firmware update for devices of the PV plant via Internet or SD card (device update)
- Time synchronization via Internet
- Restoration of default settings

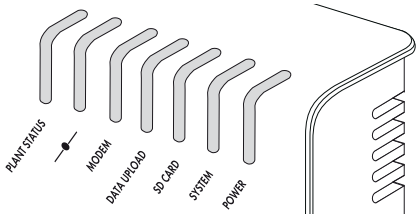
3.3 Type Label

The type label clearly identifies the Sunny WebBox. The type label can be found on the back of the enclosure.



Item	Designation	Explanation
A	Type	Device type
B	Serial Number	Device serial number
C	MAC Address	MAC address of the device
D	Version	Hardware version of the device

3.4 LED Overview



Name of LED	Status	Significance
"PLANT STATUS"	Glowing green	All devices in the PV plant have the status "OK".*
	Glowing orange	At least one device in the PV plant has the status "Warning".*
	Glowing red	At least one device in the PV plant has the status "Fault".*
	Flashing orange	The Sunny WebBox is sending update files to the devices in the PV plant.*
	off	There is no device available in the PV plant.*
—	Glowing green	Login for all connected devices is OK.
	Glowing orange	Login with at least one connected device not OK.
	Glowing red	Login for all connected devices is not OK.
"MODEM"	off	not assigned
"DATA UPLOAD"	Glowing green	The data transmission to the Sunny Portal or an external FTP server is active. Last upload was successful.
	Flashing green	The Sunny WebBox is sending data to the Sunny Portal or an external FTP server.
	Glowing red	The last data transmission to the Sunny Portal or an external FTP server was not successful.
	off	Data transmission is deactivated.

Name of LED	Status	Significance
"SD CARD"	Glowing green	The SD card is inserted, writeable, and the free memory capacity is more than 10% of the overall capacity.
	Flashing green	The SD card is being written to. The free memory capacity is more than 10% of the overall capacity.
	Glowing orange	The SD card is inserted, writeable, and the free memory capacity less than or equal to 10% of the overall capacity.
	Flashing orange	The SD card is being written to. The free memory capacity is less than or equal to 10% of the overall capacity.
	Glowing red	The SD card is full or write-protected, or there is an update file on the SD card.
	off	No SD card is inserted
"SYSTEM"	Glowing green	The Sunny WebBox is operational.
	Flashing green	The Sunny WebBox starts.
	Flashing orange	The Sunny WebBox is performing a firmware update.
	Flashing red	A system error has occurred.
"POWER"	Glowing green	The Sunny WebBox is supplied with voltage.
	off	The Sunny WebBox is not supplied with voltage.

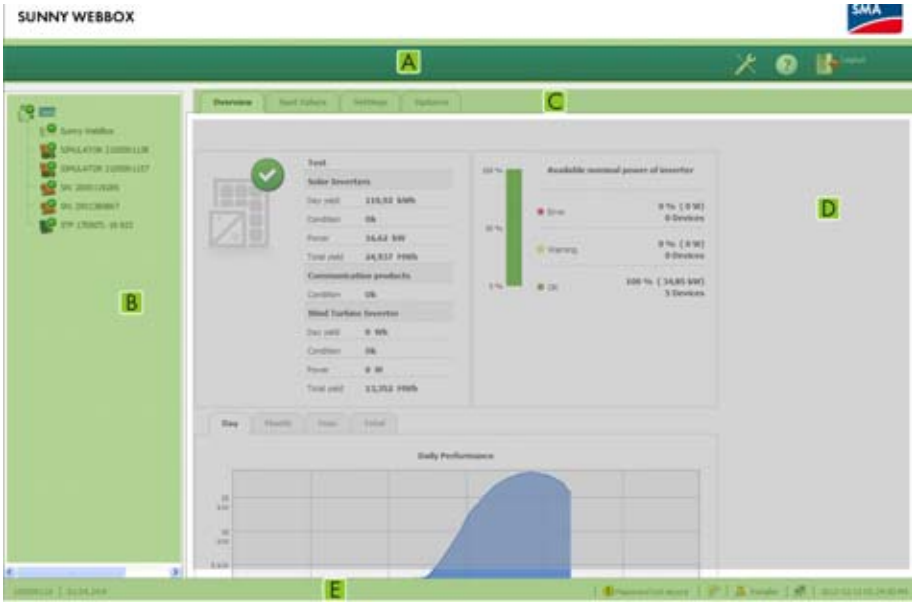
*The devices SMA radio-controlled socket, SMA *Bluetooth* Repeater, and SMA *Bluetooth* Power Injector have no influence on the status of the LED "PLANT STATUS".

3.5 Information on the Operation of the Sunny WebBox

- The Sunny WebBox user interface needs JavaScript in order to be able to correctly display and execute the contents and functions of the Sunny WebBox. Ensure that JavaScript is enabled in your Internet browser. If necessary, refer to the help of your Internet browser.
- The saving procedure for parameters can take up to 30 seconds. Do not disconnect the Sunny WebBox with *Bluetooth* from the voltage supply during the saving procedure. Otherwise, data can be lost.

4 Sunny WebBox with *Bluetooth* Basics

4.1 User Interface



Item	Designation	Significance
A	Icon Bar	The icon bar gives you quick access to the main functions of the Sunny WebBox.
B	Plant Tree	In the plant tree, all devices in a PV system are represented in a tree structure.
C	Device Menu	The device menu enables you to retrieve information and configure devices selected in the plant tree.
D	Contents area	The contents section shows the actual contents. The contents are determined by the device menu.

Item	Designation	Significance
E	Status bar	The status bar displays the current status of the Sunny WebBox and includes the following contents: • Serial number • Software Version After logging on to the Sunny WebBox, the status bar additionally contains: • Information on the password status • Information on the device update • SMA Grid Guard (only installers) • Current user group • Connection status to the PV plant • Current date and time

4.1.1 Icon Bar

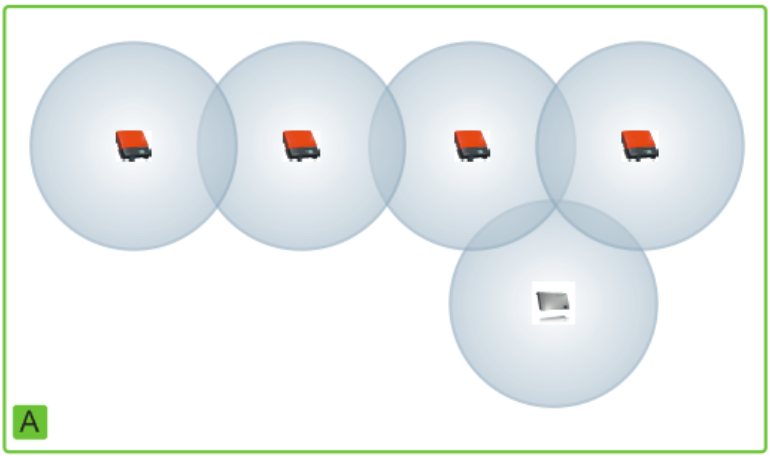
The icon bar gives you quick access to the main functions of the Sunny WebBox.

Icon	Significance
	The "Settings" button opens the Sunny WebBox settings. You can also adjust the Sunny WebBox settings via the plant tree "Sunny WebBox" "Settings".
	The "Help" button opens the Sunny WebBox help section.
	The user can log out of the Sunny WebBox user interface via the "Logout" button.

4.1.2 Plant Tree

From the plant communication perspective, a PV plant is made up of several devices which are connected to each other via the same communication type (e.g. SMA *Bluetooth*).

View of a *Bluetooth* Plant

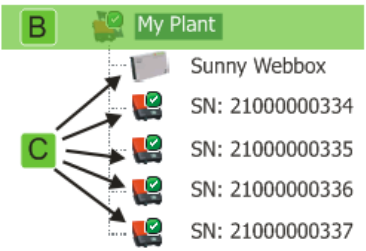


The physical structure of the plant (A) is represented by the plant tree in the Sunny WebBox. In addition, all the devices in a plant (including the Sunny WebBox) are displayed underneath the plant (B). From the plant communication perspective, the plant is generated by the Sunny WebBox.

The Plant Tree in the Sunny WebBox

In general, a distinction is made between the Plant View (B) and the Device View (C).

- See Section 6.1 "Plant View", page 41
- See Section 6.2 "Device View", page 42



4.1.3 Device Menu

The device menu shows the settings options and instantaneous values of a given device. The device must first be selected in the plant tree. The menu items change according to the device selected.

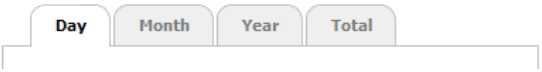
Tabs	Significance
Overview	The overview page provides information about the devices or systems selected in the plant tree. Here you will find a short overview of the most important device data as well as the actual status display.
Instantaneous Values	The instantaneous values provide current data on the selected device depending on the particular user group.
Settings	Depending on your user group, you can use the settings option to look at and adjust various parameters.
Events	The "Events" page displays the events that have occurred in a device. The events displayed depend on your user group.

4.1.4 Overview

The page "Overview" displays the key data of the entire PV plant or of a particular device.

Device View

When a device is selected in the plant tree, the yield and power values of that device are displayed in diagrams on the overview page. There are four diagrams that can be accessed via the following tabs:



Tabs	Significance
Day	Displays the device output during the course of a day.
Month	Displays the daily yield of the device over one month.
Year	Displays the monthly yield of the device over one year.
Total	Displays the annual yield of the device over the last 10 years.

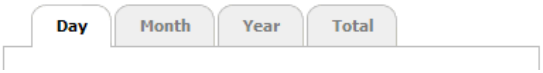
Click the mouse on a point of the graph to call up a display. The display shows the precise value at that particular point as well as the time and date.

Scroll down to the next time period using the arrows. Use the calendar symbol to select a time period directly.

Plant View

If a plant is selected in the plant tree, the overview page displays the following data for the entire PV plant:

- Data of all inverters in the PV plant:
  - Daily yield: yield achieved so far on this day
  - Condition: current operative condition of the plant (OK, fault, warning)
  - Power: power produced so far that day
  - Total yield: total yield achieved so far
- Data for the PV plant communication products:
  - Condition: current operative condition of the communication products (OK, fault, warning)
- Available nominal power of the inverters
- If there are no more than 15 devices in the plant: yield and power values of all the inverters of the PV plant in diagrams:



Tabs	Significance
Day	Shows the yield of all inverters over the course of one day
Month	Shows the daily yield of all inverters over the course of one month
Year	Shows the monthly yield of all inverters over the course of one year
Total	Shows the annual yield of all inverters over the course of the last ten years

Click the mouse on a point of the graph to call up a display. The display shows the precise value at that particular point as well as the time and date.

Scroll down to the next time period using the arrows. Use the calendar symbol to select a time period directly.

4.1.5 Instantaneous Values

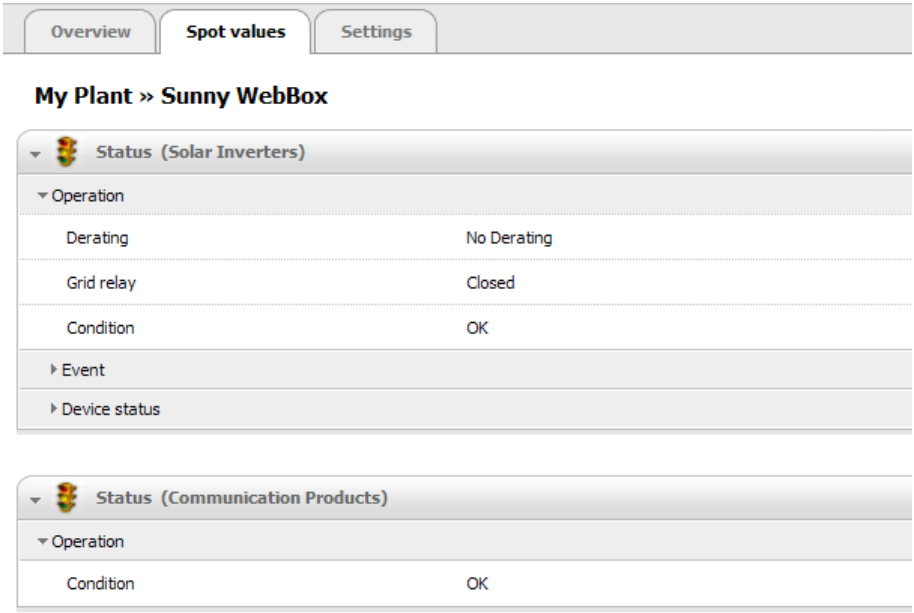
The "Spot Values" page displays all values of the device or plant selected in the plant tree. The specific user group determines which values are displayed. All values are collected into groups (parameter groups) and subgroups.

Device View

If you have selected a device in the plant tree, the "Spot Values" page displays the values for that particular device.

Plant View

If you have selected the plant in the plant tree, the "Spot Values" page displays the values for complete device classes. When you click on the parameter group, the device classes are displayed separately (e.g., PV inverters and communication products).



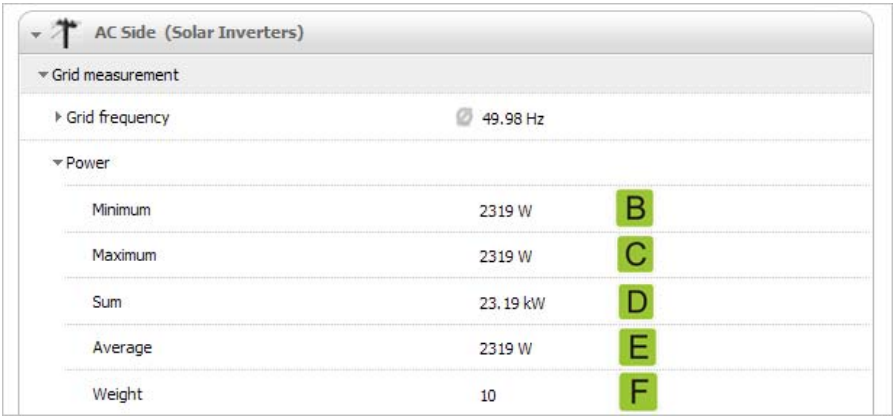
Certain values from the individual devices in a device class are combined (e.g., total power (A)).

Depending on the type of value, a meaningful aggregate for the device class is displayed:

Icon	Significance
Σ	Total
∅	Average Value
e.g. 8 A – 20 A	Smallest and greatest value

To read further information on the summarized value, click on the value.

In the following figure, the values are summarized for 10 devices as an example.



Item	Significance
B	Lowest power value of the 10 devices
C	Greatest power value of the 10 devices
D	Sum of power values of the 10 devices
E	Mean power for the 10 devices
F	Number of devices in the device class

4.1.6 Settings

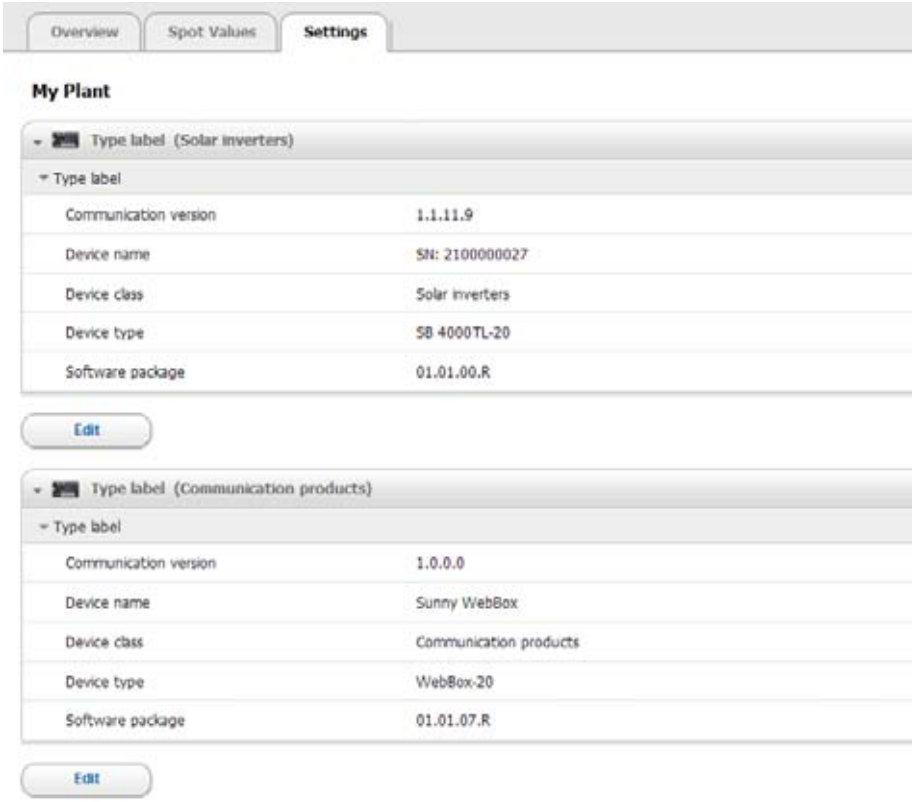
All parameters of the device or plant selected in the plant tree are displayed in the device menu "Settings". For numerical values the permissible parameter limits are displayed in brackets after the value. The display of specific parameters depends on the particular user group. All parameters are summarized in groups (parameter groups) and subgroups.

Device View

When a device is selected in the plant tree, you can modify the parameters of that device in the "Settings" page.

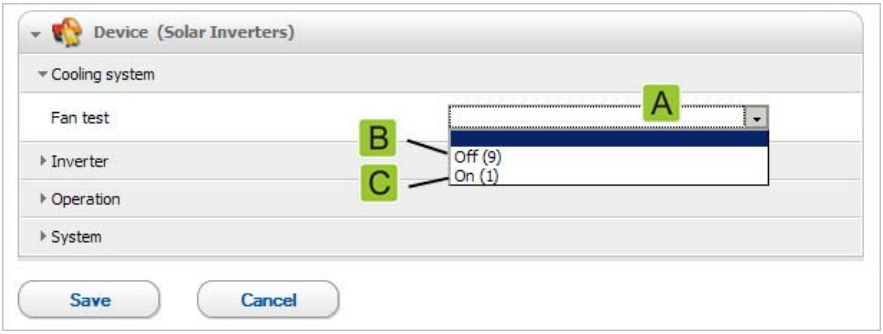
Plant View

If you have selected the plant in the plant tree, you can modify the parameters for the entire device class on the "Settings" page. All devices in the device class are then set to the new parameter value. When you click on the parameter group, the device classes are displayed separately (e.g., PV inverters and communication products).



If different values are set for devices in the same device class, this is indicated in editing mode by an empty field (A).

The different options are shown in selection menus. The number of devices set to each option is shown in brackets. See (B) and (C). Choosing an option and then saving sets all devices in this device class to this value. "*" indicates that this parameter is not available for all devices.



In text fields the common leading characters are displayed. Different characters are supplemented with "...".

4.1.7 Events

The Sunny WebBox can display its own events and the events of individual devices.
The Sunny WebBox retrieves the event list directly from the devices.

Item	Significance
A	Filter for event categories
B	Filter for the time period of the events displayed
C	Priority of event
D	Type of event
E	Event in text and event number in brackets
F	Group of parameters involved (parameter group)
G	Date on which the event occurred
H	Time at which the event occurred

Priority of Events

The event priorities are as follows:

Icon	Significance
	This type of event can only be remedied through intervention at the device by the installer. Please contact your installer with the device serial number and the event number.
	Please contact your installer with the device serial number and the event number.

Event Types

There are three different event types which the Sunny WebBox displays using symbols:

- Information
- Warning
- Error

Symbols and Meaning of Event Types

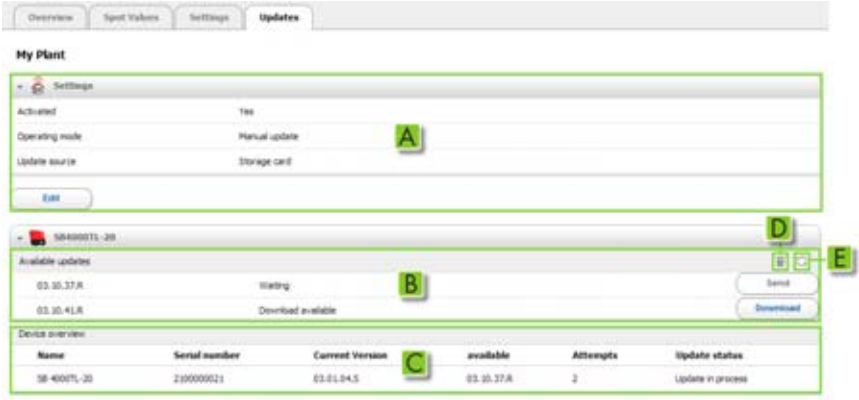
Events can have three different statuses:

- Incoming: the event is occurring.
- In progress: the event has existed for some time and could not yet be automatically remedied.
- Outgoing: the event has come to an end.

Icon	Significance
	Error
	Incoming error
	Outgoing error
	Warning
	Incoming warning
	Outgoing warning
	Information
	Incoming information
	Outgoing information

4.1.8 Updates

The page "Updates" is shown when the PV plant is selected in the plant tree. On the page "Updates", you can configure the settings for the device updates. In addition, all the available devices for the PV plant are listed here. The devices are grouped according to device type. You can use the page "Updates" to view the current firmware status for the devices. You can also view available device updates, download them and transmit them to the devices.



Item	Significance
A	Settings for the device update
B	Shows available device updates for this device group.
C	Shows all devices in this device group, with display name, serial number, current firmware version and update status. If new device updates are available, the new update files and the number of update attempts per device are also shown here.
D	Delete update files with the status "Ready".
E	Search for new update files and refresh the list of available update files.

4.2 Security and Password Concept

4.2.1 User Groups

SMA generally distinguishes between the two user groups: "User" and "Installer". Installers can also undertake additional settings on devices after entering the SMA Grid Guard code. The user groups have the following rights:

User Group	Right
User	This user group enables the user to view all information relating to the display, such as instantaneous values and parameter settings. Settings that affect functionality cannot be modified. The user can choose any plant password for the user group "User".
Installer	In addition to user rights, this user group can configure and change plant parameters that affect functionality. In addition, this user group may reset the user's plant password, and may undertake additional settings to devices after entering the SMA Grid Guard code.
Installer with SMA Grid Guard rights	The installer can change SMA Grid Guard parameters for devices.

4.2.2 Plant Password

The plant password for the respective user group is the same for all devices in a plant. After logging in with the plant password ("User"/"Installer"), you can configure several devices of your plant at the same time. If the device password is not the same as the plant password, for example if there is a new device in an existing plant, the device is depicted with a padlock ( ) in the plant tree.

Unauthorized Access to your PV Plant

The plant password protects your plant against unauthorized access.

- After initial login, you should change the default password for both user groups.

Plant Password at Delivery

All devices are delivered with the user password 0000 and the installer password 1111.

Plant password for an existing plant featuring Sunny Beam with *Bluetooth*

If the Sunny WebBox is retrofitted in an existing plant that has a Sunny Beam, the Sunny WebBox must have the same plant password set as the Sunny Beam.

4.2.3 Access Security for the Sunny WebBox with *Bluetooth*

Each user group is protected by a password chosen by the plant. Passwords are transmitted in encrypted form. After four incorrect password entries, access to the Sunny WebBox is blocked for 15 minutes. After this time you can log in again.

Protect your PV plant from unauthorized access. Take suitable protective measures, e.g.:

- Set up secure passwords (see Section 4.2.4 "Strength of Passwords", page 33).
- Change your passwords at regular intervals.
- Use different passwords for different user groups.
- Never leave slips of paper with passwords lying around.
- Install a firewall in Ethernet networks.
- Close unnecessary ports in Ethernet networks.

4.2.4 Strength of Passwords

In order to increase the security of your password, note the following properties when selecting a password:

- Use passwords with a minimum length of 8 characters. The longer the password, the more secure it is.
- Do not use names or terms from dictionaries (for example: "Dog", "Cat", "Mouse", ...).
- Do not use data related to your person as passwords (for example names of persons or pets, personal numbers or identification numbers, car license plates ...).
- Do not repeat names or terms (for example "househouse", "carcar", ...)
- Use a combination of upper and lower case letters, special characters and numbers.
- Do not use number and letter combinations which are consecutive on a keyboard (for example "12345", "qwerty", ...).

4.2.5 SMA Grid Guard

SMA Grid Guard is a safety concept for country-specific settings in the inverter, determining the grid behavior within a utility grid. These settings (Grid Guard parameters) are pre-installed in the devices and can only be changed with the SMA Grid Guard password. In order to change SMA Grid Guard parameters, you will need to be logged in as an installer and you will need your personal SMA Grid Guard password, which you can obtain from SMA Solar Technology. The application form for the personal access code is located in the download area at www.SMA-Solar.com, in the category "Data sheet" for each inverter.

4.2.6 Forgot password?

If you have forgotten your plant password, you can unlock the devices of your PV plant by means of a Personal Unlocking Key (PUK). For every inverter and every Sunny WebBox there is one PUK for each of the two user groups ("User" and "Installer").

Procedure:

1. Request PUKs for inverters and Sunny WebBox.
2. Unlock the inverters with the PUKs via the Sunny Explorer.
3. Unlock the Sunny WebBox with the PUK.

Requesting PUKs for Inverters and Sunny WebBox

1. Download the PUK application form from the Section "Service" in the download area at www.SMA-Solar.com.
2. Complete the application form and sign it.
3. Send the application form to the SMA Service Line:
   - Send the application form by e-mail (see Section 13 "Contact", page 93).

   or

   - Send the application form by fax (see Section 13 "Contact", page 93).

   or

   - Send the application form by mail (see Section 13 "Contact", page 93).

☑ The SMA Service Line will check your application and send you the requested PUKs.

Unlocking the inverter using PUK

Unlocking several inverters using PUK

Each PUK can only be used for one inverter and one user group.

- If you requested PUKs for several inverters, you must unlock each inverter individually with the corresponding PUK.

1. Log onto the inverter with the PUK using Sunny Explorer (see Sunny Explorer user manual).
2. Define a new plant password (see Sunny Explorer user manual).

Unlocking the Sunny WebBox using PUK

1. Start the Internet browser (e.g. Internet Explorer).
2. Enter the IP address of the Sunny WebBox in the address bar and press the enter key.
3. In the "User" field, select the user group for which the SMA Service Line has generated the PUK.
4. Enter the PUK in the field "Password".
5. Change the password of the Sunny WebBox (see Section 7.1 "Changing the Sunny WebBox Password", page 47). Use the plant password that you defined previously via the Sunny Explorer.

☑ The Sunny WebBox displays the inverters in the plant tree without the padlock symbol. You have access rights for all the inverters in the corresponding user group.

4.3 Icons

Icons for Access Rights

The individual devices are depicted with a symbol for the access rights in the plant tree. If no symbol is displayed after a device, you have access rights to the device corresponding to the user group which is logged in.

Updating Time in the Plant Tree

In the plant tree, updating the symbol for access rights (SMA Grid Guard symbol and padlock symbol) can take up to two minutes.

Icon	Significance
	You do not have access to the device. The device password differs from the current plant password.
	You have access to parameters which are protected by the SMA Grid Guard password. Parameters which are protected by SMA Grid Guard are also indicated by this symbol.

Device Symbols

Device symbols are displayed in the plant tree and on the device's overview page. Devices will have a specific status, which is displayed by a symbol.

Icon	Significance
	Plant
	Sunny WebBox
	Inverter
	Unknown device
	Sunny SensorBox with SMA Power Injector with *Bluetooth*
	SMA *Bluetooth* Repeater

Group Symbols for Instantaneous Values and Settings

Group symbols are used for specific parameter groups.

Icon	Significance
	Status General values that describe the status of the device. The status of other components in the device (e.g., modems) is not listed here.
	Type Label All values that describe the device/the plant.
	Device Values which apply directly to the device and which do not fall into any of the special categories (e.g., DC side, AC side, plant communication, etc.).
	User rights All values that affect the access protection for the device.

Icon	Significance
	DC side Values affecting the DC side of the device (e.g. PV modules).
	AC side Values affecting the grid side of the device.
	Grid Monitoring Includes parameters that affect the utility grid and are partially protected by the personal SMA Grid Guard password.
	Plant and device control Includes parameters for devices that must fulfill special requirements for feeding into the medium voltage level. The parameters are protected by the personal SMA Grid Guard password.
	Plant Communication All values which define communication between communication devices and the plant.
	Data Recording All values that affect data recording for the device (storage location, storage intervals, storage format).
	Device Components Includes parameters and measured values relating to the components of a device. This group is a kind of "expanded type label". For example, it files the version numbers of the system components.
	Meteorology Includes all measured values for the connected sensors e.g. temperature, radiation and wind speed.

Other Symbols

Icon	Significance
	Hourglass The hourglass is displayed when values are being saved in a device.
	Average Value The average symbol refers to an average value.
	Total The total symbol displays the summed values.
	Maximum Displays the maximum of a value.
	Minimum Displays the minimum of a value.
	Update This symbol indicates that data is being uploaded from the device.
	Alarm Clock The alarm clock symbol indicates that values are more than 10 minutes old.
	Calendar Function Opens a calendar for selecting a date, a start date, or an end date.

5 Logging in and out of the Sunny WebBox

5.1 Logging in to the Sunny WebBox

Unauthorized Access to your PV Plant

The plant password protects your plant against unauthorized access.

- After initial login, you should change the default password for both user groups.

Plant Password at Delivery

All devices are delivered with the user password 0000 and the installer password 1111.

1. Start Internet browser (e.g. Internet Explorer).
2. If you use DHCP for the Sunny WebBox (default setting), enter the URL **http://WebBox"serial number"**, e.g. http://WebBox895903467, in the address bar and press the enter key.
   Tip: You can read off the serial number from the type label (see Section 3.3 "Type Label", page 18) or determine it using an SD card (see Section 9.5 "Determining Current Network Settings of the Sunny WebBox Using the SD Card", page 79).
   ☑ The Sunny WebBox login page opens.
   – If the page does not open, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.
3. If you are using static network settings for the Sunny WebBox, enter the static IP address of the Sunny WebBox in the address bar and press the enter key. If you do not know the IP address of the Sunny WebBox, see Section 9.5 "Determining Current Network Settings of the Sunny WebBox Using the SD Card", page 79.
   ☑ The Sunny WebBox login page opens.
   – If the page does not open, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

4. Select a language.
5. In the field "User", select the user group under which you wish to log in.
6. In the field "Password", enter the password belonging to the selected user group.
7. Select [Login].

☑ The Sunny WebBox user interface opens.

5.2 Logging out of the Sunny WebBox

1. Select [Logout] in the icon bar.

☑ The Sunny WebBox login page opens. You have successfully logged out.

6 Operation

6.1 Plant View

6.1.1 Plant Status

Icon	Status	Significance
	Neutral	The status of the plant is unknown and is currently being updated.
	OK	All plant devices are working as prescribed.
	Warning	At least one device in the plant is displaying the "Warning" status. No device is displaying the "Failure" status.
	Error	At least one device in the plant is displaying the "Failure" status.

6.1.2 Setting Parameters for a Device Class

A device class refers to devices of the same type. You can configure all the devices in a device class simultaneously. It is not possible to configure different device classes at the same time. Save the changes made to one device class before processing another device class.

To configure all the devices in a device class, proceed as follows:

1. Select the plant in the plant tree.
2. Select "Settings" in the device menu.
   ☑ The parameter groups for the entire plant are displayed.
3. Select the parameter group that contains the parameter which is to be configured.
   ☑ The individual device classes are listed. It may take a moment for all the data to be read from the devices.
4. Select [Edit] below the relevant device class.
5. Change the desired parameter for the entire device class.
6. Select [Save].
   ☑ The settings will be applied to all devices in the device class.

Saving Data when Adjusting Parameters

An hourglass displays the saving process. After the changes have been saved in the Sunny WebBox, the data is transmitted to the device. The setting process can sometimes take several hours if the device (e.g. an inverter) is in night mode. When the device is started, the data is transmitted to the main drive, and the hourglass is no longer displayed.

6.1.3 Changing the Plant Name

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Type Label > Type Label".
3. Select [Edit].
4. Enter the desired plant name in the field "Plant name".
5. Select [Save].

6.2 Device View

6.2.1 Device Status

The device is in a specific status. The status is displayed via the symbols in the plant tree and on the device's overview page.

Icon	Status	Significance
	Neutral	The status of the device is currently being updated.
	OK	The device is operational and is working as prescribed.
	Warning	The device is not operating properly. It may be possible to automatically remedy the failure.
	Error	The device is in failure condition. There is a problem with the device. Check the device.
	Communication error	The device cannot communicate at present. This may happen at night, for example, when the inverter is not operating. This symbol will also be displayed if you have decommissioned the device. To remove the device from the plant tree, select the [Remove] button.

6.2.2 Setting the Device Parameters

You can configure a device via its parameters. Setting parameters for a device is dependent on the user group.

To change device parameters, proceed as follows:

1. Select the corresponding device in the plant tree.
2. Select "Settings" in the device menu.
   ☑ The existing parameter groups for the device are displayed.
3. Select the parameter group that contains the desired parameter.
   ☑ Reading the values may take a moment because the values are requested directly from the device.
4. Select [Edit].
5. Change desired parameter.
6. Select [Save].

Saving Data when Adjusting Parameters

An hourglass displays the saving process. After the changes have been saved in the Sunny WebBox, the data is transmitted to the device. The setting process can sometimes take several hours if the device, e.g. an inverter, happens to be in night mode. When the device is started, the data is transmitted to the main drive, and the hourglass disappears.

6.3 Adjusting the Device Password to the Plant Password

If the password of a device is different from the plant password, the device will be displayed with a padlock in the plant tree. This may occur, for example, when a new device is added to an existing plant. To set the new device to the plant password, proceed as follows:

1. Log into the Sunny WebBox as "Installer".
   ☑ The new device is displayed with a padlock in the plant tree.
2. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
3. Select the parameter group "User Rights > Access Control".
4. Select [Edit].
5. Enter the password of the new device in the field "Set installer password".
6. Confirm the password in the field "Confirm password".
7. Enter the password of the new device in the appropriate user group field .
8. Confirm the password in the field "Confirm password".
9. Select [Save].
   ☑ The Sunny WebBox saves the password of the new device to all approved devices. All devices now have the same plant password.

10. Restart the Sunny WebBox via the user interface (see page 77).
11. Repeat the password setting process in order to transfer your previous plant password to all devices.
12. Select [Save].
13. Restart the Sunny WebBox via the user interface (see page 77).

☑ The device is displayed without a padlock in the plant tree. The new device password is now set to the plant password.

6.4 Determining the Sunny WebBox Serial Number

You have the following options for determining the serial number of the Sunny WebBox:

- Read off the serial number from the status line of the user interface
- Determine the serial number using the SD card (see Section 9.5 "Determining Current Network Settings of the Sunny WebBox Using the SD Card", page 79)
- Read off the serial number from the type label (see Section 3.3 "Type Label", page 18)
- Determine the serial number using the parameter groups

Determining the Sunny WebBox serial number via the parameter group

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Type Label > Type Label".
3. Read off the Sunny WebBox serial number from the field "Serial Number".

6.5 Determining the WAN IP Address

You can determine the WAN (wide area network) IP address of your Sunny WebBox via the parameter group or the SD card (see Section 9.5 "Determining Current Network Settings of the Sunny WebBox Using the SD Card", page 79). The IP address of the WAN is the IP address at which the Sunny WebBox is to be accessed on the Internet.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "External Communication > Nat".
3. The WAN IP address is shown in the "WAN IP" field.

6.6 Activating/Deactivating SMA Grid Guard Mode

Country-specific Settings on the Inverter

SMA Grid Guard parameters may only be changed with the express authorization of the grid operator. Any unauthorized changes made to the SMA Grid Guard parameters shall void the operating license of the respective device.

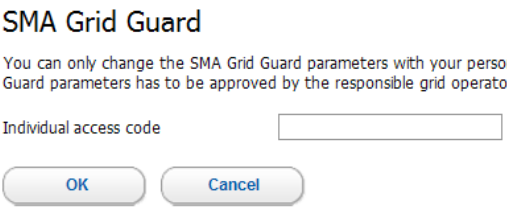
Updating Time in the Plant Tree

In the plant tree, updating the symbol for access rights (SMA Grid Guard symbol and padlock symbol) can take up to two minutes.

Activating SMA Grid Guard Mode

In order to change SMA Grid Guard parameters in devices you must enter your SMA Grid Guard password.

1. Log in as "Installer".
2. Select the SMA Grid Guard symbol in the status bar of the Sunny WebBox user interface.
   ☑ This opens the SMA Grid Guard dialog.


SMA Grid Guard
You can only change the SMA Grid Guard parameters with your personal access code. Every change to SMA Grid Guard parameters has to be approved by the responsible grid operator.
Individual access code
OK
Cancel

3. Enter your password in the "Individual access code" field. You can obtain the password from SMA (see page33).
4. Select [OK].

☑ The SMA Grid Guard code is now set. You can now edit all devices which are labeled with the SMA Grid Guard symbol.

Deactivating SMA Grid Guard Mode

To end the SMA Grid Guard mode proceed as follows:

1. Select the SMA Grid Guard symbol in the status bar of the Sunny WebBox user interface.
   ☑ This opens the SMA Grid Guard dialog.
2. Enter the blocking code "54321" in the field "Individual access code".
3. Select [OK].

☑ The SMA Grid Guard code is deactivated. Check whether the SMA Grid Guard mode has been deactivated for all inverters. The blocking code is not supported by inverters with SMA *Bluetooth* Piggy-Back.

- If the SMA Grid Guard mode remains active, log out of the Sunny WebBox user interface and log back in again after two minutes (see Section 5 "Logging in and out of the Sunny WebBox", page 39). The SMA Grid Guard code is then deactivated.

7 Configuring the Sunny WebBox

7.1 Changing the Sunny WebBox Password

Additional Rights for the Installer

If you are logged in as an installer, you have the same rights as normal users, but can also set or alter parameters that affect the functionality of the plant. In addition, the "Installer" user group can reset the user's plant password and can change SMA Grid Guard parameters.

Password for the Internal FTP Server

The password set here is also valid for access to the internal FTP server.

Setting the Sunny WebBox password means that all devices which are displayed without a padlock in the plant tree will be set with the Sunny WebBox password. In order to successfully apply the password, you will need to restart the Sunny WebBox (see page 77).

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "User Rights > Access Control".
3. Select [Edit].
4. Enter a secure password in the appropriate user group field. The password can be a maximum of 12 characters. The following special characters are permitted: ?_!-. Make sure you use a high-strength password (see Section 4.2.4 "Strength of Passwords", page 33).
5. Confirm the password in each case in the field "Confirm Password".
6. Select [Save].

☑ All devices will be set with the Sunny WebBox password.

7.2 Plant Time

7.2.1 Information on the Plant time

The date and time of a PV plant is referred to as plant time.

When operating your *Bluetooth* PV plant with the Sunny WebBox, all the connected *Bluetooth* devices adopt the plant time of the Sunny WebBox.

If additional communication products (e.g. Sunny Beam with *Bluetooth* or Sunny Explorer) are added to the PV plant, the new communication products automatically adopt the existing PV plant time.

If you change the plant time, all the inverters will adapt immediately to the new plant time. Additional communication products in the plant do not adopt the plant time for some time (7 hours max. later).

The plant time can be adjusted manually in the Sunny WebBox or synchronized via the Internet. With "Automatic Time Synchronization" the Sunny WebBox aligns the date and time with Sunny Portal once per day. You do not need to register in Sunny Portal to do this.

NOTICE

Possible data loss through changing the plant time

Take note that a time adjustment may affect data that has already been recorded. If, for example, the time or the date is put back, the recorded data could be overwritten. Only change the plant time when it is necessary.

7.2.2 Setting the Date and Time

Automatic time synchronization

You can also synchronize the plant time automatically via the Internet (see Section 7.2.4 "Activating/Deactivating Automatic Time Synchronization", page 49).

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Time settings".
3. Select [Edit].
4. In the field "Standard/Daylight Saving Time conversion on", select "Yes" in order to activate automatic adjustment between summer and winter time (default setting).

   or

   In the field "Standard/Daylight Saving Time conversion on", select "No" in order to deactivate automatic adjustment between summer and winter time. The date and time must be set manually in the event of a change.
5. In the field "Set plant time", set the current date and time of the PV plant.

6. In the field "Time zone", select the time zone in which the PV plant is located: "(default setting: UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna").
7. Select [Save].

7.2.3 Manually Synchronizing the Date and Time with Sunny Portal

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Device > Time settings".
3. In the field "Synchronize time with portal", select [Execute] in order to synchronize the date and time with Sunny Portal.

☑ The date and time will be synchronized with Sunny Portal. The synchronization was successful if the time is displayed in the "Set plant time" field.

7.2.4 Activating/Deactivating Automatic Time Synchronization

Activating Automatic Time Synchronization

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Time settings".
3. Select [Edit].
4. In the field "Automatic time synchronization", select "Yes" in order to synchronize the date and time with Sunny Portal.

Deactivating Automatic Time Synchronization

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Time settings".
3. Select [Edit].
4. In the field "Time synchronization", select "No" in order to set the date and time manually (see Section 7.2.2 "Setting the Date and Time", page 48) (default setting).

7.3 Country Settings

7.3.1 Setting the Date Format

Effect on Existing PV Plant Data

Changes to the format have an effect on all future data exports, e.g. data on the SD card or data on the internal FTP server.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Country settings".
3. Select [Edit].
4. In the "Date format" field, select the desired date format "DD"=day, "MM"=month, "YYYY"=year) (default setting: "DD.MM.YYYY").
5. Select [Save].

7.3.2 Setting the Language

- If you are not yet logged into the Sunny WebBox, set the language using the language selection at the top left of the Sunny WebBox login page.

  or

Proceed as follows:

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Country settings".
3. Select [Edit].
4. Select the desired language in the field "Language".
5. Select [Save].

7.3.3 Setting the Number Format

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Country settings".
3. Select [Edit].
4. In the field "Number format", select the desired number format (default setting: "123.456,0").
5. Select [Save].

7.3.4 Setting the Time Format

Effect on Existing PV Plant Data

Changes to the format have an effect on all future data exports, e.g. data on the SD card or data on the internal FTP server.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Country settings".
3. Select [Edit].
4. In the field "Time format", select the desired time format ("hh"=12-hour format, "HH"=24-hour format, "mm"=minutes, "ss"=seconds)(default setting: "HH:mm").
5. Select [Save].

7.3.5 Setting the Unit of Temperature

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Device > Country settings".
3. Select [Edit].
4. In the "Unit of temperature" field, select the desired unit of temperature (default setting: "Celsius").
5. Select [Save].

7.4 Changing the Device Name of the Sunny WebBox

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu

   or

   Click the button "Settings" in the toolbar.
2. Select the parameter group "Type Label > Type Label".
3. Select [Edit].
4. Enter the desired device name in the field "Device name".
5. Select [Save].

☑ The Sunny WebBox device name is set.

7.5 Network Settings

7.5.1 Information on Network Settings

Changing extended network settings

Do not change any device network settings if you are not clear on the effects of the change. Changes to values could lead to the existing network not functioning at all or only working partially. If you have any questions, contact your network administrator.

Sunny WebBox Assistant

It is recommended to use the Sunny WebBox Assistant for commissioning the Sunny WebBox and for its integration into a network. You can obtain the Sunny WebBox Assistant on the Internet at www.SMA-Solar.com.

You can assign static network settings to the Sunny WebBox or obtain these dynamically via a DHCP server. Additionally, a proxy server can be used for the Internet connection.

If you would like to make the Sunny WebBox available on the Internet so that you can directly access the Sunny WebBox via Sunny Portal for example, you must set up port forwarding on your router. For this, you may need to adjust the HTTP port and the NAT port (see Section 7.5.5 "Setting the HTTP Port", page 55 and Section 7.5.3 "Configuring Static Network Settings (Deactivating DHCP)", page 54).

7.5.2 Using Dynamic Network Settings (DHCP)

When using DHCP (Dynamic Host Configuration Protocol), the Sunny WebBox obtains its network settings (IP address, subnet mask, gateway and DNS server) via a DHCP server.

Default settings

DHCP is activated in the Sunny WebBox by default.

DHCP Server Requirements

If you want to obtain the network settings for the Sunny WebBox via DHCP, check your DHCP server in advance. The DHCP server must extend the lease of the assigned IP address. If the DHCP server assigns a new IP address after the lease has expired, we do not recommend using DHCP.

Calling up the user interface via the URL **http://WebBox"serial number"** only works if your DHCP server has a DNS function.

If your DHCP server does not have a DNS function but you want to use DHCP, you can call up the user interface via the current IP address of the Sunny WebBox. You can determine the current IP address via the SD card (see page 79). Alternatively, you can find the Sunny WebBox IP address in the DHCP server. A DHCP server can normally list all devices that have obtained an IP address from it. You can now identify the Sunny WebBox based on your MAC address. You can find the MAC address of your Sunny WebBox on the type label.

1. Log into the Sunny WebBox.
2. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
3. Select the parameter group "External Communication > DHCP".
4. Select [Edit].
5. Select "Yes" in the field "Activated".
6. Select [Save].

☑ DHCP is activated in the Sunny WebBox. You can access the user interface via the URL **http://WebBox"serial number"** (see Section 5.1 "Logging in to the Sunny WebBox", page 39).

7.5.3 Configuring Static Network Settings (Deactivating DHCP)

1. Log into the Sunny WebBox.
2. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
3. Select the parameter group "External Communication > Ethernet".
4. Select [Edit].
5. In the field "DNS server IP", enter the IP address of the DNS server (Domain Name System Server). Usually, the IP address of the router has to be entered here.
6. Enter the gateway IP address of your network into the "Gateway IP" field. Usually, the IP address of the router has to be entered here.
7. In the field "IP Address", enter the static IP address, under which the Sunny WebBox is to be accessible in the local network (see Section 11.7 "Allocating IP Addresses in a Local Network", page 91).
8. In the field "Subnet mask", enter the subnet mask of your network. Normally, you can find this information in the router manual.
9. In the parameter group "DHCP", select "No" in the field "Activated".
10. Select [Save].
    ☑ The network settings are assigned manually. You can access the user interface via the static IP address (see Section 5.1 "Logging in to the Sunny WebBox", page 39).

7.5.4 Configuring Proxy Settings

If there is a proxy server in your network, you must carry out proxy settings in the Sunny WebBox. The proxy settings of the Sunny WebBox are required for connection to the Sunny Portal and for firmware updates to the Sunny WebBox or the devices in your PV plant.

Use proxy server

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "External Communication" > "Proxy settings".
3. Select "Yes" in the "Activated" field in order to use a proxy server.
4. In the field "Login", enter the login name for the proxy server.
5. In the field "Port", enter the network port at which the proxy server is available.
6. In the field "Password", enter the password for the proxy server.
7. Confirm the password entered in the field "Confirm the password".
8. In the field "Server", enter the proxy server IP address.
9. Select [Save].

Not using the proxy server

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "External Communication" > "Proxy settings".
3. In the field "Activated", select "No" if you do not want to use the proxy server.
4. Select [Save].

7.5.5 Setting the HTTP Port

Adjusting the Network Ports

Changing the ports is only necessary in rare cases. Before adjusting the ports, contact your network administrator.

The HTTP port is the network port at which the Sunny WebBox user interface can be accessed in the local network. The default setting is port 80. If you set another HTTP port, you must enter this when opening the user interface behind the IP address.

Example: The IP address of the Sunny WebBox is 192.168.0.168 and the HTTP port has been changed to: 8080. You must then enter "http://192.168.0.168:8080" in the address line of the Internet browser.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "External Communication > HTTP".
3. Select [Edit].
4. Set the desired port in the "Port" field (default setting: port 80).
5. Select [Save].

7.5.6 Setting the NAT Port

Adjusting the Network Ports

Changing the ports is only necessary in rare cases. Before adjusting the ports, contact your network administrator.

During data transmission, the Sunny WebBox sends the IP address and port at which the Sunny WebBox is available on the Internet to the Sunny Portal. You must set up port forwarding in the router and enable the desired port (see router manual). The NAT Port is set to 80 by default. If there are several Sunny WebBoxes in your local network, you must select different NAT ports. If you have selected an NAT port other than 80, you must also set the new NAT port in the Sunny WebBox.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "External Communication > Ethernet > Nat".
3. Select [Edit].
4. Enter the desired port in the field "Port".
5. Select [Save].

7.6 Data Recording

7.6.1 Information on Data Recording

The Sunny WebBox can export the collected data from the PV plant in various data formats and make these available via the integrated FTP server or SD card.

The following data formats are possible:

- Comma Separated Value (CSV) (see Section 7.6.2 "CSV Files", page 56)
- Extensible Markup Language (XML) (see Section 7.6.3 "XML files", page 57)

All data is exported at selected recording intervals in the respective directory of the data format. Additionally, you can set the description of the measured values (see Section 7.6.4 "Setting Measurement Names in your Local Language", page 58).

Effect on Existing PV Plant Data

Changes to the format have an effect on all future data exports, e.g. data on the SD card or data on the internal FTP server.

7.6.2 CSV Files

Information on CSV Files

The Sunny WebBox saves the collected data of the PV plant into the relevant daily CSV file every five minutes. The content of the existing data is added to this. Individual data is always separated by a semicolon in the file. The decimal separator and the timestamp format in the files are determined by the country settings of the Sunny WebBox (see Section 7.3 "Country Settings", page 50).

Directory Path and Structure of the Filename:

Directory Path
.../CSV/[YYYY]/[MM]/

Filename Structure	
[YYYY]-[MM]-[DD].csv	CSV File

Example: Daily report file from 1.3.2010: .../CSV/2010/03/2010-03-01.csv

Activating Data Export in CSV Format

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Data Recording > Export".
3. Select [Edit].
4. In the field "Data export in CSV format", select "Yes".
5. Select [Save].

Deactivating Data Export in CSV Format

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Data Recording > Export".
3. Select [Edit].
4. In the field "Data export in CSV format", select "No".
5. Select [Save].

7.6.3 XML files

Information on XML Files

The Sunny WebBox saves the collected data of the PV plant into a XML file every five minutes. In order to reduce the quantity and amount of data, the XML files to be added are automatically compressed into a ZIP file and saved onto the integrated FTP server or the SD card every 15 minutes. A zip file usually contains three XML files. The decimal separator and the timestamp format in the files are determined by the country settings of the Sunny WebBox (see Section 7.3 "Country Settings", page 50). You can find how an XML file is structured in Section 11.3 "Structure of an XML Data File", page 89.

Directory Path and Structure of the Filename:

Directory Path
.../XML/[YYYY]/[MM]/[YYYY]-[MM]-[DD]/

Filename Structure	
[YYYY]-[MM]-[DD]_[HHMMSS].zip	Compressed file in ZIP format
[YYYY]-[MM]-[DD]_[HHMMSS].xml	XML file

Example: Daily report file from 2010-03-01, 12:42:08 hrs.: .../XML/2010/03/2010-03-01/2010-03-01_124503.zip

The ZIP file contains the following three XML files: 2010-03-01_123159.xml, 2010-03-01_123703.xml, 2010-03-01_124208.xml.The ZIP file contains the following 3 XML files: 2010-03-01_123159.xml, 2010-03-01_123703.xml, 2010-03-01_124208.xml.

Activating Data Export in XML Format

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Data Recording > Export".
3. Select [Edit].
4. In the field "Data export in XML format", select "Yes".
5. Select [Save].

☑ Data will be exported in XML format.

Deactivating Data Export in XML Format

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Data Recording > Export".
3. Select [Edit].
4. In the field "Data export in XML format", select "No".
5. Select [Save].

☑ Data will not be exported in XML format.

7.6.4 Setting Measurement Names in your Local Language

You can set the names of the measurements as follows:

- Technical name of the measurement *Example: Metering.TotWhOut*
- Name of the measurement as a term. *Example: Total yield*

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Data Recording > Export".
3. Select [Edit].
4. In the field "Measurement name in local language", select "Yes" in order to display the names as terms.

   or

   In the field "Measurement name in local language", select "No" in order to display the technical names.
5. Select [Save].

7.7 E-mail Alert in the Event of a Fault

7.7.1 Information on E-mail Alert in the Event of a Fault

E-mail alert in the event of a fault allows you to respond quickly to faults in your PV plant and minimize downtimes. The Sunny WebBox informs you by e-mail of the occurrence of any events of the type "Fault" and "Communication fault", and optionally also events of the type "Warning".

The Sunny WebBox must be connected to the Internet.

Delayed notification of communication faults

For plants that include inverters with upgraded SMA *Bluetooth* Piggy-Back/Piggy-Back Plus, it is possible that notifications concerning communication faults are not sent until the following day. The reason for this is that these inverters switch off at night, during thunderstorms and when the modules are covered with snow.

Multiple alerts possible via Sunny Portal report dispatch

You can also have events of the type "Warning" and "Communication fault" e-mailed to you by means of report dispatch from Sunny Portal. The Sunny WebBox settings for alerts in the event of a fault have no effect on the event reports that can be configured in Sunny Portal.

If you activate the e-mail dispatch in Sunny Portal and in the Sunny WebBox, you may receive several e-mails about the same event.

Displaying events of the type Fault, Warning and Communication fault via the user interface

The Sunny WebBox records events of the type Fault, Warning and Communication fault in the event report and displays them via the user interface (see Section 4.1.7 "Events", page 29).

7.7.2 Activating E-mail Alert in the Event of a Fault

1. Log into the Sunny WebBox as an installer.
2. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
3. Select the parameter group "External Communication > SMTP".
4. Select [Edit].
5. Enter data of the e-mail server (SMTP):
   - Enter the user name in the "Login" field.
   - If the SMTP server requests specification of an e-mail sender address, enter the desired e-mail sender address in the "Alternative e-mail sender address (optional)" field.
   - In the "Port" field, enter the port of the SMTP server.
   - In the "Password" field and the "Confirm the password" field, enter the password of the user account.
   - In the field "Server", enter the name of the SMTP server (e.g. mail.gmx.net).

6. Select [Save].
   ☑ The e-mail server (SMTP) is set up.
7. Select the parameter group "Further Applications > Alarm".
8. Select [Edit].
9. In the area "E-mail", select "Yes" in the field "Activated".
10. In the "E-mail address(es)" field, enter recipient's e-mail address. Multiple e-mail addresses should be separated by a comma or a semicolon.
11. Make a selection in the field "Alarm upon warnings" in the area "Filter settings":
    - If you would exclusively like to be informed of events of the type "Fault", select "No".
    - If you would like to be informed of events of the type "Fault" and events of the type "Warning", select "Yes".
12. Select [Save].

☑ E-mail alert in the event of a fault is activated.

13. To test the dispatch, send a test e-mail. To do so, select [Execute] in the "Send test e-mail" field.

☑ The Sunny WebBox sends a test e-mail to the specified e-mail address(es).

7.7.3 Deactivating E-mail Alert in the Event of a Fault

1. Log into the Sunny WebBox as an installer.
2. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
3. Select the parameter group "Further Applications > Alarm".
4. Select [Edit].
5. Select "No" in the field "Activated".

7.8 Activating/Deactivating Grid Management

1. Log into the Sunny WebBox as an installer.
2. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
3. Select the parameter group "Equipment & device control system > Plant control".
4. To activate grid management, select "Yes" in the field "Activated".

   or

   To deactivate grid management, select "No" in the "Activated" field.

8 Managing Plant Data

8.1 Information on the Plant Data

The Sunny WebBox can display instantaneous values and parameters for the detected devices and forward them for further processing (e.g. via Sunny Portal, FTP Push, the integrated FTP server or an SD card).

SMA devices provide various instantaneous values and parameters depending on the device type, which can be displayed and processed via the Sunny WebBox depending on the user group. Instantaneous values are measurements or calculated values for the device such as temperature and power.

Parameters are used in the configuration of the device and can, depending on access rights, be edited.

For more information on which instantaneous values and parameters are provided by each device, see the device manual.

The Sunny WebBox saves all continually recorded values of the connected devices on the 1 GB internal hard drive. If the capacity of the internal drive is reached, then all values older than 12 months will be overwritten. Save the plant data at regular intervals using the functions provided in the Sunny WebBox to an external hard drive.

8.2 Sunny Portal

8.2.1 Information on Sunny Portal

The Sunny WebBox offers you the possibility of transmitting all of your PV plant's relevant plant data automatically to the Sunny Portal Internet portal. Sunny Portal is suitable for the individual presentation of plant data of every power class and offers comprehensive evaluation and notification functions. You will find further information on the Sunny Portal at www.SunnyPortal.com.

Before you can use Sunny Portal, you must register via the Sunny WebBox (see page 62).

If you are already registered in Sunny Portal with the PV plant, you must align the plant identifier (see page 64). This may apply if the Sunny WebBox is replaced, for example.

Possible Delays in Visualization and Notifications

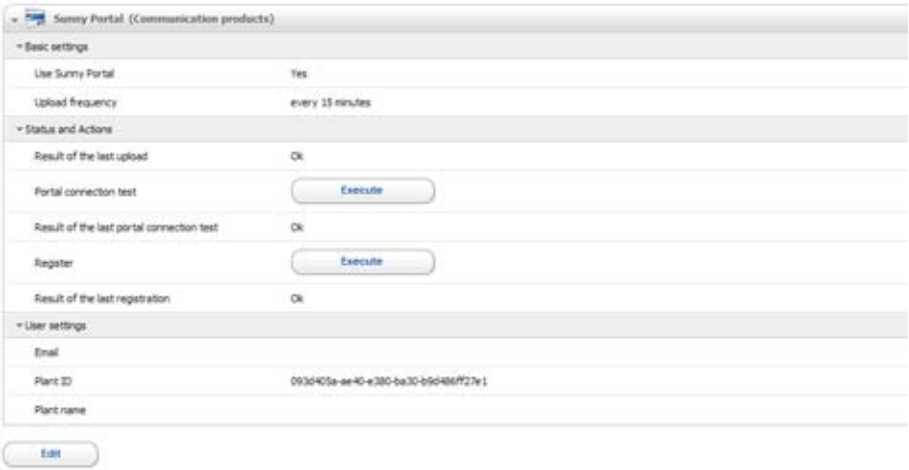
Observe that the Sunny Portal may display the transmitted data of your PV plant and send you the notifications with delay.

Text Message Notification to a Cell Phone

You can use Sunny Portal to generate report e-mails that are sent automatically to your cell phone by an external service provider.

8.2.2 Registering Sunny WebBox in the Sunny Portal

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Sunny Portal > User settings".
3. Select [Edit].



4. In the field "E-mail", enter the e-mail address to which Sunny Portal should transmit the access data.
5. The plant identifier is automatically entered in the field "Plant ID". Together with the e-mail address and the plant name, the number is a clear identifier of the PV plant.
6. In the field "Plant name", enter the name of your PV plant. The plant will be displayed under this name in Sunny Portal.
7. Select [Save].
8. In the subgroup "Status and Actions", enter [Execute] in the field "Register".

☑ The Sunny WebBox performs the registration onto Sunny Portal. The registration was successful if "OK" is displayed in the field "Result of the last registration". Sunny Portal then sends your access data to the e-mail address entered.

- If the registration is unsuccessful, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

8.2.3 Activating/Deactivating Sunny Portal

Activating Data Transmission to the Sunny Portal

Requirement:

You must be registered in Sunny Portal (see Section 8.2.2 "Registering Sunny WebBox in the Sunny Portal", page 62).

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Sunny Portal > Basic settings".
3. Select [Edit].
4. In the field "Use Sunny Portal", select "Yes" in order to use Sunny Portal. The Sunny WebBox transmits the PV plant data automatically to the Sunny Portal depending on the defined upload frequency.
5. Select [Save].

Deactivating Data Transmission to the Sunny Portal

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Sunny Portal > Basic settings".
3. Select [Edit].
4. In the field "Use Sunny Portal", select "No" in order not to use Sunny Portal (default setting).
5. Select [Save].

8.2.4 Testing the Connection to Sunny Portal

You can test the connection to Sunny Portal. You do not need to register in Sunny Portal to do this.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Sunny Portal > Status and Actions".
3. In the field "Portal connection test", select [Execute].

☑ The Sunny WebBox performs a connection test. The connection test was successful if "OK" is displayed in the "Result of the last portal connection test" field.

– If the connection test is unsuccessful, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

8.2.5 Setting the Upload Frequency

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Sunny Portal > Basic settings".
3. Select [Edit].
4. In the field "Upload frequency", select the desired value. See Table:

Selection	Significance
"every 15 minutes"	Data transmission within the next full 15 minutes.
"daily"	Data transmission within the next full 24 hours.
"hourly"	Data transmission within the next full hour.

Possible delays in data uploads

The uploading of data can be delayed by up to 2.5 minutes, in order to avoid too great a data transmission load for the Sunny Portal at certain times.

If an upload is still in progress and a request is made for a new upload, (possibly at 15 minute intervals), then the new upload will not be performed. The data will be transmitted at the next upload.

5. Select [Save].

☑ The Sunny WebBox will transmit the data to the Sunny Portal at the prescribed intervals.

8.2.6 Accessing the Sunny WebBox via Sunny Portal

During every data transmission from the Sunny WebBox to the Sunny Portal, Sunny Portal saves the current IP address of the Sunny WebBox or the current IP address of your router, with which the Internet connection is established.

Using Sunny Portal, you can directly access your Sunny WebBox via the Internet. Please note that you must set up port forwarding on your router. Here it may be necessary to align the HTTP port and the NAT port of the Sunny WebBox (see Section 7.5 "Network Settings", page 52).

8.2.7 Adjusting the Plant Identifier for Sunny Portal

In the following cases you must adjust the plant ID in the Sunny WebBox:

- The plant data of the PV plant in question has already been sent to Sunny Portal via another communication device.
- The plant identifier set for the Sunny WebBox was reset using the Reset button.
- The Sunny WebBox has been replaced with another Sunny WebBox.
- The Sunny WebBox is to be added to a plant that is already registered in Sunny Portal.

Perform the following steps to adjust the plant identifier of the Sunny WebBox for Sunny Portal:

1. Register in Sunny Portal (www.SunnyPortal.com) with the access data available.
2. Go to "Configuration > Plant properties" on the Sunny Portal page.
3. Copy the plant identifier to the clipboard.
4. Log into the Sunny WebBox as user or installer.
5. In the Sunny WebBox user interface select the Sunny WebBox in the plant tree.
6. Select "Settings" in the device menu.
7. Select the parameter group "Sunny Portal > User settings".
8. Select [Edit].
9. In the field "Plant ID", delete the current content and paste the content of the clipboard.
10. Select [Save].

8.3 SD Card

8.3.1 Information on Saving Plant Data on an SD Card

You can save plant data onto an SD card. Once you have inserted the SD card into the SD card slot, the Sunny WebBox copies all the plant data that is stored on the internal drive of the Sunny WebBox onto the SD card. The Sunny WebBox saves new plant data onto the SD card as long as the SD card is inserted in the SD card slot and there is enough memory available. In order to select a data format in which the data should be made available, refer to Section 7.6 "Data Recording", page 56.

8.3.2 Saving Plant Data on an SD Card

NOTICE

Data loss on the SD card

- Do not remove the SD card while the LED "SD CARD" is flashing green or orange. This can damage the file system of the SD card and lead to data loss. Depending on the amount of data, the writing process can take some time.

Take note of the information on the SD card (see Section 11.1 "Information on the SD Card", page 87).

- Insert the SD card into the SD card slot of the Sunny WebBox.

8.4 Integrated FTP Server

8.4.1 Information on the Integrated FTP Server

The Sunny WebBox is equipped with an integrated FTP server. You can directly access the saved plant data via the FTP server. The FTP server is deactivated by default. You can call up the data with any FTP program or with Internet Explorer. The FTP server is protected via the passwords of the respective user group.

Please note that for logging into the integrated FTP server, the English description (User ID) for the respective user group and the related password must be entered:

User ID	User Group
"Installer"	For the "Installer" user group
"User"	For the "User" user group

In order to select a data format in which the data should be made available, refer to Section 7.6 "Data Recording", page 56.

8.4.2 Activating/Deactivating the Integrated FTP Server

Activating the Integrated FTP Server

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Device > FTP server".
3. Select [Edit].
4. In the field "Activated", select "Yes" in order to activate the integrated FTP server.
5. Select [Save].

Deactivating the Integrated FTP Server

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Device > FTP server".
3. Select [Edit].
4. In the field "Activated", select "No" in order to deactivate the integrated FTP server.
5. Select [Save].

8.4.3 Accessing the FTP Server via Internet Explorer

1. Start Internet Explorer.
2. Enter the IP address of the Sunny WebBox, including the user identifier and the password, in the address line of the Internet browser as shown in the following example:

   ftp://[UserID]:[Password]@[IP-address]

   Use the following User ID:

User ID	User Group
"Installer"	For the "Installer" user group
"User"	For the "User" user group

   Example: if you want to log onto the Sunny WebBox with the IP address 192.168.0.168 as installer with the password "1111" enter: ftp://Installer:1111@192.168.0.168

3. Press the enter key on the keyboard.

☑ The browser displays the directory structure of the integrated FTP server. You can now download and display the data.

The user name and password remain stored in the cache of the Internet browser

Once you have accessed the integrated FTP server using an Internet browser, the user name and password remain stored in the cache of the Internet browser. To prevent unauthorized access to the integrated FTP server, clear the cache of the Internet browser.

8.5 FTP Push

8.5.1 Information on FTP Push

The Sunny WebBox is equipped with an FTP Push function. With this function the Sunny WebBox can load the collected data of your PV plant to a freely selectable FTP server. FTP Push always transmits via network port 21. The FTP Push function is deactivated as standard. The collected data is uploaded to the directory given and in the desired data format every 15 minutes.

8.5.2 Activating/Deactivating FTP Push

Activating FTP Push

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Further Applications > FTP Push".
3. Select [Edit].
4. In the field "Login", enter the login name of the external FTP server.
5. In the field "Port", enter the network port under which the FTP server is available.
6. In the field "Password", enter the password of the FTP server.
7. In the field "Server path", enter the sub directory into which the data should be saved on the FTP server.
8. In the field "Server", enter the address of the server.
9. In the field "Data export in CSV format", select "Yes" in order to receive the data in CSV format.

   or

   In the field "Data export in CSV format", select "No" in order not to receive the data in CSV format.
10. In the field "Data export in XML format", select "Yes" in order to receive the data in XML format.

    or

    In the field "Data export in XML format", select "No" in order not to receive the data in XML format.
11. Select [Save].

Deactivating FTP Push

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Further Applications > FTP Push".
3. Select [Edit].
4. In the field "Data export in CSV format", select "No".
5. In the field "Data export in XML format", select "No".
6. Select [Save].

8.5.3 Testing FTP Push

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Further Applications > FTP Push".
3. In the "Connection test" field, select [Execute].

☑ The Sunny WebBox performs a connection test. The connection test was successful if "OK" is displayed in the "Result of the last connection test" field.

- If the connection test is unsuccessful, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

9 Service Functions

9.1 Performing Self-Update for the Sunny WebBox

9.1.1 Information

You have the option of updating the Sunny WebBox firmware. You can perform the firmware update via the Internet or locally via the SD card. The existing settings of the Sunny WebBox and data from the PV plant remain available after the update procedure. In order to ensure that the Sunny WebBox is always up to date, automatic firmware updates via the Internet are recommended.

The update process is indicated by the orange flashing LED "SYSTEM" and occasionally by a red light chaser across all the LEDs. The firmware update is complete when the LED "SYSTEM" is glowing green. An update procedure can take up to a maximum of 20 minutes.

Reading off the current Sunny WebBox firmware version

You can find the current firmware version of the Sunny WebBox in the status bar at the bottom left-hand corner of the user interface.

Access to User Interface Temporarily Blocked

During the update, the Sunny WebBox restarts and you cannot access the Sunny WebBox user interface for a short period of time.

Do not disconnect the Sunny WebBox from the utility grid during the update process.

9.1.2 Firmware Update from the Internet (Recommended)

If the Sunny WebBox has Internet access, you can update the Sunny WebBox via the Internet automatically or manually.

Activating/Deactivating Automatic Firmware Updates

When the automatic firmware update is activated, the Sunny WebBox checks for new firmware updates once a day. If a new firmware update is available, the Sunny WebBox downloads the firmware update from the Internet and starts the update procedure. The update procedure starts automatically at night between 11:00 p.m. and 11:30 p.m.

Unexpected interruption of an automatically started update procedure

If an automatic update procedure for the Sunny WebBox is interrupted, e.g. as a result of a power failure, the Sunny WebBox restarts the update procedure in the next defined time period.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Device > Update".
3. Click [Edit].
4. In the field "Automatic update", select "Yes" in order to activate the automatic firmware update (default setting).

   or

   In the field "Automatic update", select "No" to deactivate the automatic firmware update.
5. Select [Save].

Manually Updating the Firmware

NOTICE

Loss of plant data possible

- Only perform a manual firmware update when the PV plant is not in operation (e.g. during the night). Otherwise, losses may occur during the recording of the plant data.

You can also carry out manual updates when the automatic firmware update is activated.

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Device > Update".
3. In the "Check for update and install it" field, select [Execute].

☑ The Sunny WebBox checks whether a new firmware update is available. If a new firmware update is available, the Sunny WebBox downloads the firmware update from the Internet and starts the update procedure.

9.1.3 Firmware Update via the SD Card

NOTICE

Loss of plant data possible

- Only perform a manual firmware update when the PV plant is not in operation (e.g. during the night). Otherwise, losses may occur during the recording of the plant data.

NOTICE

Data loss on the SD card possible

- Do not remove the SD card while the LED "SD CARD" is flashing green or orange. This can damage the file system of the SD card and lead to data loss. Depending on the amount of data, the writing process can take some time.

Use a separate SD card for firmware updates

Use a separate SD card for firmware updates, which contains only the update files for the Sunny WebBox. If there are update files on the external SD card, exporting XML and CSV files is deactivated.

Take note of the information on the SD card (see Section 11.1 "Information on the SD Card", page 87).

1. Select the required update file in the download area at www.SMA-Solar.com and download it to your computer.
2. Connect the SD card to the computer and create a folder called "UPDATE" on the SD card.
3. Copy the update file (*.up2) into the folder created on the SD card, then remove the SD card from the computer.

Only save one update file in the "UPDATE" folder

The "UPDATE" folder may contain a maximum of one update file. If there is more than one update file in the "UPDATE" folder, the firmware will not be updated.

4. Remove the plug-in power supply of the Sunny WebBox from the socket-outlet.
5. Insert the SD card into the SD card slot of the Sunny WebBox.
6. Insert the plug-in power supply of the Sunny WebBox into the socket.

☑ After approx. 90 seconds, the Sunny WebBox is ready for operation and the update process starts.

9.2 Performing a Subdevice Update

9.2.1 Information

You can update the firmware on the devices of your PV plant via the Sunny WebBox.
The Sunny WebBox can be used to update the firmware of the following devices:

- all SMA inverters with integrated *Bluetooth*
- SMA *Bluetooth* Piggy-Back/SMA *Bluetooth* Piggy-Back Plus from firmware version 02.00.00.R.
- SMA *Bluetooth* Repeater
- SMA Power Injector with *Bluetooth*

The device update can be performed online from the Internet or locally via the SD card. The existing settings of the Sunny WebBox and data from the PV plant remain available after the update procedure. In order to always keep the firmware of the devices in your PV plant up to date, automatic device firmware updates via the Internet are recommended.

NOTICE

Risk of yield loss

For some inverters, device updates are only possible from a specific DC input voltage. The inverters in question do not feed energy during a device update. This can result in temporary yield losses.

Do not change the update source during the update process

If you change between the update sources "Storage card" and "Update portal" during the update, the firmware update will not take place.

Updates are not performed for devices with the padlock symbol ( )

Devices with insufficient access rights (indicated by a lock symbol in the plant tree ( ) to connect to the Sunny WebBox are not updated.

If the access rights are insufficient, change the password of the device in question to the plant password (see the Sunny WebBox User Manual).

Sufficient DC input voltage is required to update the devices

In some inverters, a device update is only possible from a certain DC input voltage.
The DC input voltage can be too low for a device update depending on the time of day, weather situation or the status of the PV modules (e.g. covered by snow or leaves).

Do not disconnect the Sunny WebBox from the utility grid during the update process.

Update Status

The respective update status for the entire PV plant, for the individual devices and update files is shown on the user interface of the Sunny WebBox.

Reading off the update status of the PV plant

1. Log into the Sunny WebBox.
2. Select the Sunny WebBox in the plant tree.
3. Select "Overview" in the device menu.

   or

   Select the parameter group "Plant Communication" > "Device update" in the device menu "Instantaneous Values".

If the update status "Information" or "Warning" appears, this is also displayed in the status bar.

Icon	Update status	Significance
	OK	No update files are available, or the update function is not activated.
	Information	"There is information regarding the device update."
	Warning	"There are warnings regarding the device update."

Device update status

- To read off the update status of the individual devices, select "Name of your plant" in the plant tree and select the "Updates" tab (see Section 4.1.8 "Updates", page 31).

Update status	Significance
"OK"	No update files are available for this device, or the update function is not activated.
"Update available"	The update file is ready for sending to the devices in the PV plant.
"Update in process"	The update process is underway.
"Update failed"	The update process was not successful. The update file was not sent to all devices in the PV plant.

Status of the update file

- To read off the status of the update file, select "Name of your plant" in the plant tree and select the tab "Updates" tab (see Section 4.1.8 "Updates", page 31).

Status	Significance
"Download available"	The update file is available for downloading.
"Ready"	The update file was downloaded and can be sent to the devices in the PV plant.
"Sending"	The update file is being sent to the devices in the PV plant. This can take approx. 20 minutes.
"Waiting"	The update file is in the queue and will be sent to the devices in the PV plant as soon as possible.

9.2.2 Device Update via the Internet (Recommended)

If the Sunny WebBox has Internet access, you can update the firmware of the devices in your PV plant automatically or manually from the Internet.

Activating automatic device update

If automatic device updates are activated, the Sunny WebBox checks whether a new device update is available once a day, between 10 pm and 3 am. If a new device update is available, the Sunny WebBox downloads the device update from the Internet. In SMA inverters with upgraded SMA *Bluetooth* Piggy-Back, the update process starts on the following day as a result of overnight shutdown (11 am). For all other supported SMA devices, the update procedure starts at 4:00 am the following morning.

Unexpected interruption of an automatically started update procedure

If an automatically started update procedure of the Sunny WebBox is interrupted (e.g. as a result of a power outage or if the update source changes), the Sunny WebBox restarts the update procedure the following day.

1. Select "Name of your PV plant" in the plant tree and select "Updates" in the device menu.
2. Select the parameter group "Settings".
3. Click [Edit].
4. Select "Yes" in the field "Activated".
5. Select "Automatic update" in the field "Operating mode".
6. Select "Update portal" in the field "Update source".
7. Select [Save].

Performing a manual device update

1. Select "Name of your plant" in the plant tree, and select "Updates" in the device menu.
2. Select the device type (e.g. SB 4000TL-US-20, SB 5000TL-US-20) for which you want to carry out an update manually.
3. Select the required update file in the area "Available updates", and click [Download].
   ☑ The Sunny WebBox downloads the update file from the Internet and indicates when the process is complete by marking the update file as "Ready" in the area "Available updates".
   – If the update file cannot be downloaded, your computer's Internet connection may be interrupted. Reestablish Internet access. If necessary, contact your Internet service provider.
4. Click [Send] when the Sunny WebBox has loaded the selected update file.
   ☑ The Sunny WebBox checks the saved files and sends the update file once a day to the devices in the PV plant on up to five consecutive days.
   ☑ During the sending process, the LED "PLANT STATUS" is flashing orange.

☑ When all devices in the PV plant report the version number of the update file sent, the update process has been completed successfully.
   – If an error message is displayed, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

9.2.3 Device Update via the SD Card

Take note of the information on the SD card (see Section 11.1 "Information on the SD Card", page 87).

NOTICE

Data loss on the SD card possible

- Do not remove the SD card while the LED "SD CARD" is flashing green or orange. This can damage the file system of the SD card and lead to data loss. Depending on the amount of data, the writing process can take some time.

Use a separate SD card for device updates

Use a separate SD card for device updates. If there are update files on the external SD card, exporting XML and CSV files is deactivated.

Activating automatic device updates via SD card

1. Select "Name of your PV plant" in the plant tree and select "Updates" in the device menu.
2. Select the parameter group "Settings".
3. Click [Edit].
4. Select "Yes" in the field "Activated".
5. Select "Automatic update" in the field "Operating mode" to activate the automatic device update.
6. In the field "Update source", select "Storage card".
7. Select [Save].

Performing an Automatic Device Update via SD Card

Updates are not performed for devices with the padlock symbol ( )

Devices with insufficient access rights (indicated by a lock symbol in the plant tree ( ) to connect to the Sunny WebBox are not updated.

If the access rights are insufficient, change the password of the device in question to the plant password (see the Sunny WebBox User Manual).

1. Select the required update file in the download area at www.SMA-Solar.com and download it to your computer.
2. Connect the SD card to the computer and create a folder called "UPDATE" on the SD card.
3. Copy the downloaded update file (*.up2) to the "UPDATE" folder created on the SD card, and then remove the SD card from the computer.
4. Insert the SD card into the SD card slot of the Sunny WebBox.
   ☑ The LED "SD CARD" is flashing green.
   ☑ The Sunny WebBox copies the selected update file to the internal SD card.
5. Remove the SD card when the LED "SD CARD" stops flashing.
   ☑ The Sunny WebBox checks the saved files and sends the update file once a day to the devices in the PV plant on up to five consecutive days.
   ☑ During the sending process, the LED "PLANT STATUS" is flashing orange.

☑ When all devices in the PV plant report the version number of the update file sent, the update process has been completed successfully.

– If an error message is displayed, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

Performing a manual device update via SD card

1. Select the required update file in the download area at www.SMA-Solar.com and download it to your computer.
2. Connect the SD card to the computer and create a folder called "UPDATE" on the SD card.
3. Copy the downloaded update file (*.up2) to the "UPDATE" folder created on the SD card, and then remove the SD card from the computer.
4. Insert the SD card into the SD card slot of the Sunny WebBox.
   ☑ The LED "SD CARD" is flashing green.
5. Start the update process:
   – Select "Name of your plant" in the plant tree, and select "Updates" in the device menu.
   – Select the device type (e.g. 4000TL-US-20, SB 5000TL-US-20) for which you want to carry out an update manually.
   – Select the required update file in the area "Available updates", and click [Download].
   ☑ The Sunny WebBox copies the selected update file to the internal SD card.
6. Remove the SD card when the LED "SD CARD" stops flashing.
7. Click [Send] when the Sunny WebBox has loaded the selected update file.
   ☑ The Sunny WebBox checks the saved files and sends the update file once a day to the devices in the PV plant on up to five consecutive days.
   ☑ During the sending process, the LED "PLANT STATUS" is flashing orange.

☑ When all devices in the PV plant report the version number of the update file sent, the update process has been completed successfully.
   – If an error message is displayed, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

9.3 Restarting the Sunny WebBox via the User Interface

1. Select the Sunny WebBox in the plant tree and select "Settings" in the device menu.
2. Select the parameter group "Device > System".
3. In the field "Initiate device restart", select [Execute].
4. Select [OK].

☑ The Sunny WebBox will restart. The restart was successful if the LED "SYSTEM" and the LED "POWER" are glowing green again. The start-up sequence can take up to 90 seconds.
   – If the LED "SYSTEM" or the LED "POWER" are not glowing green, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

9.4 Resetting the Sunny WebBox Using the Reset Button

You can reset the Sunny WebBox via a small hole in the rear side of the Sunny WebBox behind which the reset button is located. For this to be done, the Sunny WebBox must have electrical power.

Data backup

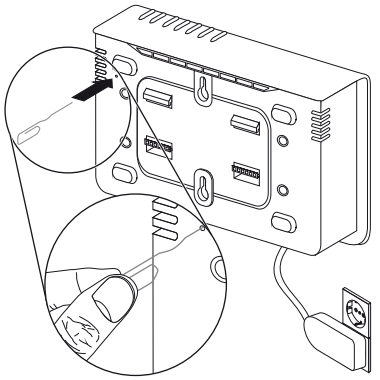
Before you reset the Sunny WebBox, take note of all settings such as network or portal settings if necessary. In addition to this, back up the PV plant data in order to avoid data losses.

Depending on how long you press the Reset button, the Sunny WebBox performs the actions listed in the following table.

Duration	Action
1 to 5 seconds	Resets the passwords to the factory setting. All other settings and PV plant data will be saved.
5 to 15 seconds	Resets the network settings to the factory setting. All other settings and PV plant data will be saved.
15 to 60 seconds	Resets all settings (event memory, network settings, modem settings, portal settings and passwords) of the Sunny WebBox back to the default values. PV plant data will be fully deleted.
Over 60 seconds	The Sunny WebBox is not reset. All settings remain saved.

- Use a sharp object to press the hidden reset button through the hole.

☑ The Sunny WebBox is reset.



9.5 Determining Current Network Settings of the Sunny WebBox Using the SD Card

The following steps allow you to determine the current settings and the current firmware of the Sunny WebBox if you do not have access to the user interface.

Take note of the information on the SD card (see Section 11.1 "Information on the SD Card", page 87).

1. Insert the SD card into the SD card slot of the Sunny WebBox.
   ☑ The Sunny WebBox creates a directory with the name "WEBBOX_[Serial number]" on the SD card and uses it to store the XML file "config.xml". The writing process is complete when the LED "SD CARD" glows continuously.
   Example: WEBBOX_0155000123\config.xml
2. If the LED "SD CARD" glows continuously, remove the SD card from the SD card slot of the Sunny WebBox.
3. Read the SD card using a computer with an SD card reader.
4. In the WebBox_[Serial number] directory, open the "config.xml" file with a text editor or an Internet browser.

☑ Read off the network settings of the Sunny WebBox (see Section 11.2 "Structure of the Config.xml File", page 87).

10 Troubleshooting

10.1 General Troubleshooting for the Sunny WebBox

No.	Problem	Cause	Rectification
1	The Sunny WebBox is not available via the user interface. **or** You cannot find the Sunny WebBox via the Sunny WebBox Assistant.	The Sunny WebBox is not connected to the network or to the power supply.	• Connect the Sunny WebBox directly to the computer or the local network using the network cable and supply the Sunny WebBox with voltage (see installation manual of the Sunny WebBox with *Bluetooth*).
		Incorrect network settings of the network components.	• Use the Sunny WebBox Assistant for commissioning. • Check the network settings of the computer with which you wish to access the Sunny WebBox. Align the network settings if necessary. • Reset the Sunny WebBox (see page 78) and repeat the commissioning. • Check the network settings for the individual network components (e.g., router, proxy server, etc.). Adjust the network settings if necessary. • Contact your network administrator.
		A firewall is blocking the connection.	• Deactivate the computer firewall or enable the necessary connection.
		Defective or damaged network components, network cables or plug connections.	• Replace the defective or damaged parts of the network. • Contact your network administrator.

No.	Problem	Cause	Rectification
1	The Sunny WebBox is not available via the user interface. **or** You cannot find the Sunny WebBox via the Sunny WebBox Assistant.	The Internet browser is incorrectly configured.	• If there is a proxy server in your network, you must enter an exception rule for the proxy server in your Internet browser (see Section 11.4 "Information on Your Internet Browser", page 90).
		There is no Internet connection.	• Reestablish Internet access. If necessary, contact your Internet provider.
		The Sunny WebBox has not been started correctly.	• Remove the Sunny WebBox plug-in power supply from the socket-outlet and plug it back in after a short time in order to restart the Sunny WebBox. Note that this can lead to loss of collected plant data.
		The proxy server does not support IPv6.	• Use a proxy server that supports IPv6.
2	The LED "SYSTEM" continuously flashes red.	A system error has occurred.	• Remove the Sunny WebBox plug-in power supply from the socket-outlet and plug it back in after a short time in order to restart the Sunny WebBox. Note that this can lead to loss of collected plant data. • Contact the SMA Service Line.
3	The LED "POWER" is off.	The Sunny WebBox is not supplied with electricity.	• Check the power supply of the socket-outlet and rectify any faults.

No.	Problem	Cause	Rectification
4	Sunny WebBox does not send any data to Sunny Portal or the external FTP server (the LED "DATA UPLOAD" is glowing red) **or** The connection test to Sunny Portal or to the external FTP server was not successful.	The data transmission is incorrectly configured.	• Check the settings for Sunny Portal or FTP Push (see page 61). • Perform a connection test. • You must be registered for data transmission to the Sunny Portal. Register your Sunny WebBox in the Sunny Portal (see page 62).
		There is a fault in the network.	• Check the network settings for the individual network components (e.g. router, Sunny WebBox, computer) and adjust these if necessary. • Check the network components for defects or damage. Replace defective or damaged parts of the network. • Perform a connection test.
5	Sunny Portal registration was not successful.	Invalid data	• Perform a connection test (see page 63).
6	After an FTP download, the Internet Explorer shows old Sunny WebBox data.	The cache properties of Internet Explorer contain old data.	• Use an FTP client to load the plant data from the internal FTP server of the Sunny WebBox.

No.	Problem	Cause	Rectification
7	The firmware update for connected devices failed.	You are not connected to the Internet.	• Reestablish Internet access. If necessary, contact your Internet service provider. ☑ If you have set automatic device update, the automatic device update starts again the following day. • If you want to start the device update straight away, perform a manual device update (see "Performing a manual device update", page 75).
		The SD card was removed during the update process.	• Reinsert the SD card into the SD card slot of the Sunny WebBox and perform a manual device update (see "Performing a manual device update via SD card", page 77).
		After five attempts, the system was unable to transmit the update file to the PV plant devices.	• Check the status of the *Bluetooth* connection for the devices in your PV plant. Note that the *Bluetooth* connection can also be interrupted by the absence of DC input voltage of the inverter. The DC input voltage can vary depending on the time of day, weather or the condition of PV modules (e.g. covered with snow or leaves). – If necessary, improve the quality of the connection. – If you wish to start the device update straight away, perform a manual update (see "Performing a manual device update", page 75 and "Performing a manual device update via SD card", page 77).

No.	Problem	Cause	Rectification
8	The LED "SD CARD" is glowing red.	The SD card is full.	• Replace the SD card or format the SD card in FAT 16 format.
		The SD card is write-protected.	• Remove the write protection of the SD card.
		There is an update file in the "UPDATE" directory on the SD card.	• Delete the update file or perform the update.
9	After a Sunny WebBox is replaced, Sunny Portal contains two plants with the same name.	Duplicate Sunny Portal registration	The Sunny WebBox supplied as a replacement device logs into the Sunny Portal with a new plant ID. Sunny Portal creates a new plant for this plant identifier, even if you gave the plant the same name. • Assign the plant ID of the old plant to the replacement device (see page 64). • In the replacement device, enter the e-mail address of a user who has administrator rights for the plant in Sunny Portal. • In Sunny Portal, delete the new plant the replacement device created.
10	Parameters cannot be edited.	You do not possess the necessary rights for the parameter.	• Change the user group.
		You have an inverter with upgraded SMA *Bluetooth* Piggy-Back with a firmware version lower than 02.00.00.R.	The configuration of parameters and the graphical presentation of monthly and annual energy values are not supported. • Perform a firmware update for the *Bluetooth* Piggy-Back using Sunny Explorer.
11	Windows does not display the LAN connection.	The network card device driver (Ethernet card) is not installed.	• Check the installation of the network adapter in the device manager and reinstall the device driver.
		The network card is defective.	• Replace the faulty network card with a new one.
12	Fault in the user interface display	JavaScript is not enabled.	• Enable JavaScript in your Internet browser.

10.2 Troubleshooting for the *Bluetooth* Connection

No.	Problem	Cause	Rectification
1	The Sunny WebBox displays no *Bluetooth* devices.	An incorrect NetID is set.	• Set the NetID of the PV plant (see installation manual for the Sunny WebBox with *Bluetooth*) and repeat commissioning. • Contact your installer.
		The connection to the *Bluetooth* plant is too weak.	• Shorten the distance to the devices or use an SMA *Bluetooth* Repeater in order to extend the radio range. Repeat the commissioning (see installation manual of the Sunny WebBox with *Bluetooth*).
		There are already four masters connected to the *Bluetooth* plant.	• Remove a master and repeat the commissioning (see installation manual of the Sunny WebBox with *Bluetooth*).
		There are already two participants connected to the device through which you want to set up a connection to the *Bluetooth* system.	• Change the position of the Sunny WebBox in order to set up a connection via another device in the plant or remove one master from the plant. Further information on SMA *Bluetooth* can be found in the download area of www.SMA-Solar.com
2	Inverter is not accessible anymore.	The *Bluetooth* connection was interrupted.	• Wait until the Sunny WebBox has automatically re-established the connection.

No.	Problem	Cause	Rectification
2	Inverter is not accessible anymore.	Parameters for the *Bluetooth* communication were changed.	When setting parameters that regulate the *Bluetooth* connection (e.g. parameters for the transmission power and country parameters), the communication via *Bluetooth* is interrupted for some time because the inverters are carrying out a restart of the communication interface. This does not affect inverters with upgraded SMA *Bluetooth* Piggy-Back. • Wait until the inverter has completed a restart. The inverter is then accessible again.
		Inverter with upgraded SMA *Bluetooth* Piggy-Back is in night mode.	• Wait until the inverter is again working in normal operation. The inverter is then accessible again.
		The inverter has not been set to and put into operation under the NetID as your PV plant.	• The inverter must be set to the NetID of your PV plant and commissioned. Contact your installer.
3	The Sunny WebBox displays unknown inverters.	The NetID that is set has already been assigned by another *Bluetooth* PV plant.	• You must assign the PV plant a free NetID. Contact your installer.
4	An inverter is displayed as unknown device in the plant tree.	An old firmware version is installed on this inverter with integrated *Bluetooth*.	• Ensure that the inverter with integrated *Bluetooth* has the latest firmware version (see Technical Description "Firmware Update with SD Card" at www.SMA-Solar.com). • Contact your installer.
		The new inverter type is not recognized by the Sunny WebBox.	• Perform a self-update of the Sunny WebBox (see page 69).

11 Appendix

11.1 Information on the SD Card

To ensure trouble-free operation of the SD card, use SD cards available from SMA. Compatibility with all SD cards available on the market cannot be guaranteed. The Sunny WebBox does not support SD cards with storage capacities of more than 2 GB or SDHC cards.

Only use SD cards which have been formatted with the FAT16 file system. If necessary, reformat the SD card using the computer.

The Sunny WebBox converts the SD card's file system to TFAT in order to increase data security. If you wish to delete everything on the SD card, you must format the SD card on the computer with the FAT16 file system.

11.2 Structure of the Config.xml File

The "config.xml" configuration file contains information on the Sunny WebBox network settings, the firmware version and further settings.

Example:

```
<?xml version="1.0" encoding="utf-8"?>
<WebBox>
  <Settings>
    <add key="Version" value="1.5" />
    <add key="Plant-ID" value=" " />
    <add key="User-ID" value="Max.Mustermann@sma.de" />
<add key="DHCP" value="false" />
    <add key="IP-Address" value="192.168.0.168" />
    <add key="SubNetMask" value="255.255.255.0" />
    <add key="Gateway" value="192.168.0.100" />
    <add key="DNS-Server" value="192.168.0.100" />
       <add key="NAT-Port" value="80" />
    <add key="Webserver-Port" value="80" />
    <add key="Webservice-Port" value="80" />
  </Settings>
</WebBox>
```

Setting	Significance
Version	The current firmware version of the Sunny WebBox
Plant ID	Plant ID for Sunny Portal

Setting	Significance
User ID	User ID for Sunny Portal
DHCP	Displays whether the network settings are acquired via DHCP.
IP Address	The current IP address of the Sunny WebBox
SubNetMask	The current Subnet mask of the Sunny WebBox
Gateway	The currently set Gateway IP address
DNS Server	The currently set DNS server IP address
NAT Port	The currently set NAT port
Web server port	The currently set port of the web server
Web service port	The set port of the web service

11.3 Structure of an XML Data File

Example:

```
<?xml version="1.0" encoding="utf-8"?>
<WebBox>
 <Info>
  <Created>2012-11-22T11:10:00</Created>
  <Culture>de</Culture>
  <UtcOffset>60</UtcOffset>
 </Info>
 <CurrentPublic>
  <Key>Meine Sunny WebBox:155001390:Metering.TotWhOut</Key>
  <Mean>34698.724</Mean>
  <Unit>kWh</Unit>
  <Base>1</Base>
  <Period>300</Period>
  <Timestamp>2012-11-22T11:10:00</Timestamp>
 </CurrentPublic>
  <MeanPublic>
  <Key>My Sunny WebBox:155001390:GridMs.TotW</Key>
 <Min>405</Min>
 <Max>3719</Max>
  <Mean>9019</Mean>
  <Unit>W</Unit>
  <Base>1</Base>
  <Period>300</Period>
  <Timestamp>2012-11-22T11:10:00</Timestamp>
  </MeanPublic>
  <MeanPublic>
 (...)
  </MeanPublic>
</WebBox>
```

Setting	Significance
Info	Information
Create	Date of generation

Setting	Significance
Culture	Language
UtcOffset	Offset in minutes to UTC (Universal Time Coordinated)
MeanPublic	Data of the mean values
CurrentPublic	Data of the spot values
Key	Name of the element made up of device name, serial number of the device and the parameter name. Individual values are separated by a colon. *Example: D <Key>SENS0700:5141:TmpMdul C</Key>*
Min	Smallest value in measurement interval / merging
Max	Largest value in measurement interval / merging
Mean	Average value in measurement interval / merging
Base	Number of measured values in the interval / Number of merged values
Period	Length of the measurement interval in seconds
TimeStamp	Time stamp at which the average was calculated

11.4 Information on Your Internet Browser

In order to be able to call up the Sunny WebBox user interface, you need a current Internet browser. You can use the standard settings of your Internet browser.

Ensure that

- JavaScript is activated.
- If a proxy server is active in your network, you must set up a proxy exception rule in your browser (see page 11.5 "Setting up a Proxy Exception Rule in Internet Explorer", page 90).

11.5 Setting up a Proxy Exception Rule in Internet Explorer

1. Start Internet Explorer.
2. In Internet Explorer, select "Tools > Internet Options".
3. The "Internet Options" window opens.
4. Select the "Connections" tab, then click [Settings].
5. Select [Advanced].
6. In the "Do not use proxy server for addresses beginning with:" field, enter the address *192.168.**.
7. Confirm the entry with [OK] and close each further window with [OK].

11.6 Activating IPv6 in Windows XP SP2

In order to be able to locate the Sunny WebBox with the Sunny WebBox Assistant, IPv6 is required.

IPv6 stands for Internet Protocol Version 6 and specifies the procedures that are necessary for data transmission via a package-switching data network.

IPv6 is the successor to IPv4, which is still predominantly found in use on the Internet. IPv6 is already activated in Windows Vista, Windows 7, MacOS and Linux. In Windows XP SP2, you must activate IPv6.

In order to activate IPv6, proceed as follows:

1. In Windows select "Start > Settings > Network Connections".
2. Double-click the LAN connection used to connect the Sunny WebBox.
   - If Windows displays several LAN connections, there are probably several network connections installed in the computer. Ensure that you select the correct network connection, with which the computer is connected to the Sunny WebBox. If necessary, refer to the manual of your computer.
   - In the event that no LAN connection is displayed, refer to Section 10.1 "General Troubleshooting for the Sunny WebBox", page 80.

   ☑ The "Local Area Connection Status" window opens.
3. Select [Properties] in the "General" tab.

   ☑ The window "Local Area Connection Properties" opens.
4. Activate "Microsoft TCP/IP version 6".
5. Select [OK].

11.7 Allocating IP Addresses in a Local Network

You select a static IP address (Internet Protocol). Use the address range which is available to your router. In most cases the address range of the router is between 192.168.0.1. and 192.168.255.254. If necessary refer to the manual of your router.

Please note during the allocation of the IP address that the first three address parts of the IP address must be identical for all participants of the same network. You may not allocate the same IP address twice.

Example:

Router:	***192.168.0.****1*
Computer 1:	***192.168.0.****2*
Computer 2:	***192.168.0.****3*
Sunny WebBox:	***192.168.0.****168*

12 Compliance Information

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that changes or modifications not expressly approved by SMA America, LLC could void the user's authority to operate this equipment.

IC Compliance

This device complies with Industry of Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- This device may not cause interference, and
- This device must accept any interference, including interferences that may cause undesired operation of the device.

13 Contact

If you have technical problems concerning our products, contact the SMA Service Line. We require the following information in order to provide you with the necessary assistance:

- Sunny WebBox firmware version
- Serial number and hardware version of the Sunny WebBox
- Type of communication interface between Sunny WebBox and the inverters
- Type and serial number of inverters connected to the PV plant

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